### Hardware

- **CPU Name:** Intel Xeon E3-1225 v6
- **Max MHz.:** 3700
- **Nominal:** 3300
- **Enabled:** 4 cores, 1 chip
- **Orderable:** 1 chip
- **Cache L1:** 32 KB I + 32 KB D on chip per core
- **L2:** 256 KB I+D on chip per core
- **L3:** 8 MB I+D on chip per chip
- **Memory:** 64 GB (4 x 16 GB 2Rx8 PC4-2400T-E)
- **Storage:** 1 x 1 TB SATA, 7200 RPM
- **Other:** None

### Software

- **OS:** Red Hat Enterprise Linux Server release 7.4 (Maipo)
- **Kernel:** 3.10.0-693.21.1.el7.x86_64
- **Compiler:** C/C++: Version 18.0.2.199 of Intel C/C++ Compiler for Linux;
  Fortran: Version 18.0.2.199 of Intel Fortran Compiler for Linux
- **Parallel:** Yes
- **Firmware:** Version 5.0.3006 02/28/2018 released Apr-2018
- **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

### Results

**NEC Corporation**

**Express5800/T110i-S (Intel Xeon E3-1225 v6)**

**SPECspeed2017_fp_base = 21.8**

**SPECspeed2017_fp_peak = 22.1**

**CPU2017 License:** 9006

**Test Sponsor:** NEC Corporation

**Test Date:** Nov-2018

**Hardware Availability:** Apr-2017

**Tested by:** NEC Corporation

**Software Availability:** Mar-2018

**Test Sponsor:** NEC Corporation

**Hardware Availability:** Apr-2017

**Tested by:** NEC Corporation

**Software Availability:** Mar-2018

**Threads**

<table>
<thead>
<tr>
<th>Test</th>
<th>Threads</th>
<th>SPECspeed2017_fp_base</th>
<th>SPECspeed2017_fp_peak</th>
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<tr>
<td>603.bwaves_s</td>
<td>4</td>
<td>71.7</td>
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<tr>
<td>607.cactuBSSN_s</td>
<td>4</td>
<td>36.9</td>
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<td>619.lbm_s</td>
<td>4</td>
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<tr>
<td>621.wrf_s</td>
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<tr>
<td>644.nab_s</td>
<td>4</td>
<td>31.7</td>
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</tr>
<tr>
<td>649.fotonik3d_s</td>
<td>4</td>
<td>16.2</td>
<td>16.2</td>
</tr>
<tr>
<td>654.roms_s</td>
<td>4</td>
<td>13.9</td>
<td>13.9</td>
</tr>
</tbody>
</table>

**603.bwaves_s**

- **Threads:** 4
- **SPECspeed2017_fp_base:** 71.7
- **SPECspeed2017_fp_peak:** 71.7

**607.cactuBSSN_s**

- **Threads:** 4
- **SPECspeed2017_fp_base:** 36.9
- **SPECspeed2017_fp_peak:** 36.9

**619.lbm_s**

- **Threads:** 4
- **SPECspeed2017_fp_base:** 6.66
- **SPECspeed2017_fp_peak:** 6.66

**621.wrf_s**

- **Threads:** 4
- **SPECspeed2017_fp_base:** 27.4
- **SPECspeed2017_fp_peak:** 27.4

**627.cam4_s**

- **Threads:** 4
- **SPECspeed2017_fp_base:** 15.7
- **SPECspeed2017_fp_peak:** 15.7

**628.pop2_s**

- **Threads:** 4
- **SPECspeed2017_fp_base:** 26.9
- **SPECspeed2017_fp_peak:** 26.9

**638.imagick_s**

- **Threads:** 4
- **SPECspeed2017_fp_base:** 16.7
- **SPECspeed2017_fp_peak:** 16.7

**644.nab_s**

- **Threads:** 4
- **SPECspeed2017_fp_base:** 31.7
- **SPECspeed2017_fp_peak:** 31.7

**649.fotonik3d_s**

- **Threads:** 4
- **SPECspeed2017_fp_base:** 16.2
- **SPECspeed2017_fp_peak:** 16.2

**654.roms_s**

- **Threads:** 4
- **SPECspeed2017_fp_base:** 13.9
- **SPECspeed2017_fp_peak:** 13.9

**603.bwaves_s**

- **Threads:** 4
- **SPECspeed2017_fp_base:** 71.7
- **SPECspeed2017_fp_peak:** 71.7

**607.cactuBSSN_s**

- **Threads:** 4
- **SPECspeed2017_fp_base:** 36.9
- **SPECspeed2017_fp_peak:** 36.9

**619.lbm_s**

- **Threads:** 4
- **SPECspeed2017_fp_base:** 6.66
- **SPECspeed2017_fp_peak:** 6.66

**621.wrf_s**

- **Threads:** 4
- **SPECspeed2017_fp_base:** 27.4
- **SPECspeed2017_fp_peak:** 27.4

**627.cam4_s**

- **Threads:** 4
- **SPECspeed2017_fp_base:** 15.7
- **SPECspeed2017_fp_peak:** 15.7

**628.pop2_s**

- **Threads:** 4
- **SPECspeed2017_fp_base:** 26.9
- **SPECspeed2017_fp_peak:** 26.9

**638.imagick_s**

- **Threads:** 4
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**644.nab_s**

- **Threads:** 4
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- **SPECspeed2017_fp_peak:** 31.7

**649.fotonik3d_s**

- **Threads:** 4
- **SPECspeed2017_fp_base:** 16.2
- **SPECspeed2017_fp_peak:** 16.2

**654.roms_s**

- **Threads:** 4
- **SPECspeed2017_fp_base:** 13.9
- **SPECspeed2017_fp_peak:** 13.9

---

**603.bwaves_s**

- **Threads:** 4
- **SPECspeed2017_fp_base:** 71.7
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**607.cactuBSSN_s**

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**619.lbm_s**

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**621.wrf_s**

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**627.cam4_s**

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- **SPECspeed2017_fp_base:** 31.7
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**649.fotonik3d_s**

- **Threads:** 4
- **SPECspeed2017_fp_base:** 16.2
- **SPECspeed2017_fp_peak:** 16.2

**654.roms_s**

- **Threads:** 4
- **SPECspeed2017_fp_base:** 13.9
- **SPECspeed2017_fp_peak:** 13.9

---

**CPU Name:** Intel Xeon E3-1225 v6

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Results Table

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</tbody>
</table>

SPECspeed2017_fp_base = 21.8
SPECspeed2017_fp_peak = 22.1

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Operating System Notes

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

General Notes

Environment variables set by runcpu before the start of the run:
KMP_AFFINITY = "granularity=fine,compact"
OMP_STACKSIZE = "192M"

Binaries compiled on a system with 1x Intel Core i7-6700K 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

Yes: 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.

PEC CPU2017 Floating Point Speed Result

NEC Corporation

Express5800/T110i-S (Intel Xeon E3-1225 v6)

SPECspeed2017_fp_base = 21.8
SPECspeed2017_fp_peak = 22.1

CPU2017 License: 9006
Test Sponsor: NEC Corporation
Test Date: Nov-2018
Tested by: NEC Corporation
Hardware Availability: Apr-2017
Software Availability: Mar-2018

Platform Notes

BIOS Settings:
Power Management Policy: Custom
Energy Performance: Performance
Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9
running on t110is Thu Nov  8 04:55:14 2018

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) CPU E3-1225 v6 @ 3.30GHz
  1 "physical id"s (chips)
  4 "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 : 4
  siblings : 4
  physical 0: cores 0 1 2 3

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 4
On-line CPU(s) list: 0-3
Thread(s) per core: 1
Core(s) per socket: 4
Socket(s): 1
NUMA node(s): 1
Vendor ID: GenuineIntel
CPU family: 6
Model: 158
Model name: Intel(R) Xeon(R) CPU E3-1225 v6 @ 3.30GHz
Stepping: 9
CPU MHz: 3592.875
CPU max MHz: 3700.0000
CPU min MHz: 800.0000
BogoMIPS: 6624.00
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 256K
L3 cache: 8192K
NUMA node0 CPU(s): 0-3
Flags: fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov

(Continued on next page)
## SPEC CPU2017 Floating Point Speed Result

**NEC Corporation**

**Express5800/T110i-S (Intel Xeon E3-1225 v6)**

<table>
<thead>
<tr>
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<tbody>
<tr>
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</tbody>
</table>

### Platform Notes (Continued)

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
aperf perf prof eagerfpu pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 fma
cx16 xtric x86pec pcid sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave
avx f16c rdrand lahf_lm abm 3dnowprefetch epb intel_pstate mce mmx tm2 ssse3 fma
 cx16 xtric x86pec pcid sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave
avx f16c rdrand lahf_lm abm 3dnowprefetch epb intel_pstate mce mmx tm2 ssse3 fma
 cx16 xtric x86pec pcid sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave
avx f16c rdrand lahf_lm abm 3dnowprefetch epb intel_pstate mce mmx tm2 ssse3 fma

### 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
node 0 size: 65474 MB
node 0 free: 63619 MB
node distances:
    node 0
    0: 10
```

### From /proc/meminfo

```
MemTotal: 65915028 kB
HugePages_Total: 0
Hugepagesize: 2048 kB
```

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

```
os-release:
NAME="Red Hat Enterprise Linux Server"
VERSION="7.4 (Maipo)"
ID="rhel"
ID_LIKE="fedora"
VARIANT="Server"
VARIANT_ID="server"
VERSION_ID="7.4.1"
PRETTY_NAME="Red Hat Enterprise Linux Server 7.4 (Maipo)"
redhat-release: Red Hat Enterprise Linux Server release 7.4 (Maipo)
system-release: Red Hat Enterprise Linux Server release 7.4 (Maipo)
system-release-cpe: cpe:/o:redhat:enterprise_linux:7.4:ga:server
```

### Kernel self-reported vulnerability status:

(Continued on next page)
NEC Corporation

Express5800/T110i-S (Intel Xeon E3-1225 v6)

**SPEC CPU2017 Floating Point Speed Result**

SPECspeed2017_fp_base = 21.8

SPECspeed2017_fp_peak = 22.1

---

**CPU2017 License:** 9006

**Test Sponsor:** NEC Corporation

**Test Date:** Nov-2018

**Hardware Availability:** Apr-2017

**Tested by:** NEC Corporation

**Software Availability:** Mar-2018

---

**Platform Notes (Continued)**

CVE-2017-5754 (Meltdown): Mitigation: PTI
CVE-2017-5753 (Spectre variant 1): Mitigation: Load fences
CVE-2017-5715 (Spectre variant 2): Mitigation: IBRS (kernel)

run-level 3 Nov 8 04:49

SPEC is set to: /home/cpu2017

Filesystem  Type  Size  Used  Avail  Use%  Mounted on
/dev/sda3  ext4  909G  119G  744G  14%  /

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.

BIOS American Megatrends Inc. 5.0.3006 02/28/2018
Memory:
4x Micron 18ASF2G72AZ-2G3B1 16 GB 2 rank 2400

---

**Compiler Version Notes**

---

**CC 619.lbm_s(base) 638.imagick_s(base, peak) 644.nab_s(base, peak)**

---

**icc (ICC) 18.0.2 20180210**

Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

---

**CC 619.lbm_s(peak)**

---

**icc (ICC) 18.0.2 20180210**

Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

---

**FC 607.cactuBSSN_s(base, peak)**

---

**icpc (ICC) 18.0.2 20180210**

Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

---

**icc (ICC) 18.0.2 20180210**

Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

---

**ifort (IFORT) 18.0.2 20180210**

Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

---

(Continued on next page)
NEC Corporation

Express5800/T110i-S (Intel Xeon E3-1225 v6)

SPEC CPU2017 Floating Point Speed Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

SPECspeed2017_fp_base = 21.8
SPECspeed2017_fp_peak = 22.1

CPU2017 License: 9006
Test Sponsor: NEC Corporation
Test Date: Nov-2018
Tested by: NEC Corporation
Hardware Availability: Apr-2017
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Compiler Version Notes (Continued)

==============================================================================
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ifort (IFORT) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
---

==============================================================================
FC  603.bwaves_s(peak) 649.fotonik3d_s(peak)
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ifort (IFORT) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
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==============================================================================
CC  621.wrf_s(base) 627.cam4_s(base, peak) 628.pop2_s(base)
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Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
icc (ICC) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
---

==============================================================================
CC  621.wrf_s(peak) 628.pop2_s(peak)
---
ifort (IFORT) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
icc (ICC) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
---

Base 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
NEC Corporation

Express5800/T110i-S (Intel Xeon E3-1225 v6)

**SPEC CPU2017 Floating Point Speed Result**

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**Hardware Availability:** Apr-2017
**Software Availability:** Mar-2018

### 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:**

- `-Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch`
- `-ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP`
- `-L/usr/local/je5.0.1-64/lib -ljemalloc`

**Fortran benchmarks:**


**Benchmarks using both Fortran and C:**


**Benchmarks using Fortran, C, and C++:**


### Peak Compiler Invocation

**C benchmarks:**

- `icc -m64 -std=c11`

**Fortran benchmarks:**

- `ifort -m64`
Peak Compiler Invocation (Continued)

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: basepeak = yes
644.nab_s: basepeak = yes

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-AVX2 -qopt-prefetch -ipo -O3
-ffinite-math-only -no-prec-div -qopt-mem-layout-trans=3
-qopenmp -nostandard-realloc-lhs
654.roms_s: -DSPEC_OPENMP -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=3
-qopenmp -nostandard-realloc-lhs

Benchmarks using both Fortran and C:
621.wrf_s: -prof-gen(pass 1) -prof-use(pass 2) -O2 -xCORE-AVX2
-qopt-prefetch -ipo -O3 -ffinite-math-only -no-prec-div
-qopt-mem-layout-trans=3 -DSPEC_SUPPRESS_OPENMP -qopenmp
-DSPEC_OPENMP -nostandard-realloc-lhs
627.cam4_s: -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
-ffinite-math-only -qopt-mem-layout-trans=3 -qopenmp
SPEC CPU2017 Floating Point Speed Result

NEC Corporation

Express5800/T110i-S (Intel Xeon E3-1225 v6)

SPECspeed2017_fp_base = 21.8
SPECspeed2017_fp_peak = 22.1

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

Test Date: Nov-2018
Hardware Availability: Apr-2017
Software Availability: Mar-2018

Peak Optimization Flags (Continued)

627.cam4_s (continued):
-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:
http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.2017-12-21.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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