### Hardware

**CPU Name:**  Intel Xeon Gold 5122  
**Max MHz:**  3700  
**Nominal:**  3600  
**Enabled:**  4 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:**  16.5 MB I+D on chip per chip  
**Other:**  None  
**Memory:**  192 GB (12 x 16 GB 2Rx8 PC4-2666V-R)  
**Storage:**  1 x 1 TB SATA, 7200 RPM, RAID 0  
**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:**  Compiler for Linux  
**Parallel:**  Yes  
**Firmware:**  NEC BIOS Version U30 02/15/2018 released Mar-2018  
**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
### NEC Corporation

Express5800/R120h-2M (Intel Xeon Gold 5122)

**SPEC CPU2017 Integer Speed Result**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
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<th>Seconds</th>
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<tbody>
<tr>
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<td>641.leela_s</td>
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</table>

**SPECspeed2017_int_base** = 7.88

**SPECspeed2017_int_peak** = 8.13

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"
- **LD_LIBRARY_PATH** = "/home/cpu2017/lib/ia32:/home/cpu2017/lib/intel64:/home/cpu2017/je5.0.1-32:/home/cpu2017/je5.0.1-64"
- **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.

jemalloc, a general purpose malloc implementation

- built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5
SPEC CPU2017 Integer Speed Result

NEC Corporation

Express5800/R120h-2M (Intel Xeon Gold 5122)

SPECspeed2017_int_base = 7.88
SPECspeed2017_int_peak = 8.13

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

Platform Notes

BIOS Settings:
Thermal Configuration: Maximum Cooling
Workload Profile: General Peak Frequency Compute
Intel Hyper-Threading: Disabled
Memory Patrol Scrubbing: Disabled
Energy/Performance Bias: Maximum Performance
LLC Dead Line Allocation: Disabled
LLC Prefetch: Enabled
Workload Profile: Custom
NUMA Group Size Optimization: Flat

Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9
running on r120h2m Sat Nov 17 20:15:36 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) Gold 5122 CPU @ 3.60GHz
  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 2 3 4 10

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: 85
Model name: Intel(R) Xeon(R) Gold 5122 CPU @ 3.60GHz
Stepping: 4
CPU MHz: 3600.000
BogoMIPS: 7200.00
Virtualization: VT-x
L1d cache: 32K

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

```
L1i cache:             32K
L2 cache:              1024K
L3 cache:              16896K
NUMA node0 CPU(s):     0-3
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 arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc
                        aperfmperf eagerfpu pnpi pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 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 pdp cpuid cx8 apic cpuid
                        intel_pt spec_ctrl ibpb_support tpr_shadow vmi flexpriority ept vpid fsgsbse
                        tsc_adjust bmi1 hle avx2 smep bmi2 ibrms invpcid rtm cqm mpx mrsrdt_a avx512f avx512dq
                        rdseed adrs adx smap clflushopt clwb avx512cd avx512bw avx512vl xsaveopt xsavec xgetbv1
                        cqm_llc cqm_occum_llc cqm_mbm_total cqm_mbm_local dtherm ida arat pln pts
```

```
From /proc/cpuinfo cache data
  cache size : 16896 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
  node 0 size: 196268 MB
  node 0 free: 191530 MB
  node distances:
    node 0
    0:  10

From /proc/meminfo
  MemTotal:       197752804 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"
    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
```

(Continued on next page)
**SPEC CPU2017 Integer Speed Result**

**NEC Corporation**

**Express5800/R120h-2M (Intel Xeon Gold 5122)**

SPECspeed2017_int_base = 7.88
SPECspeed2017_int_peak = 8.13

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<th>Test Date: Nov-2018</th>
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<td>Test Sponsor: NEC Corporation</td>
<td>Hardware Availability: Aug-2017</td>
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<tr>
<td>Tested by: NEC Corporation</td>
<td>Software Availability: Mar-2018</td>
</tr>
</tbody>
</table>

**Platform Notes (Continued)**

uname -a:

```
Linux r120h2m 3.10.0-693.21.1.el7.x86_64 #1 SMP Fri Feb 23 18:54:16 UTC 2018 x86_64
x86_64 x86_64 GNU/Linux
```

Kernel self-reported vulnerability status:

- 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 17 20:09

SPEC is set to: /home/cpu2017

```
Filesystem     Type  Size  Used Avail Use% Mounted on
/dev/sda3      ext4  909G  384G  479G  45% /
```

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 NEC U30 02/15/2018
Memory:
  12x UNKNOWN NOT AVAILABLE
  12x UNKNOWN NOT AVAILABLE 16 GB 2 rank 2666

(End of data from sysinfo program)
```

**Compiler Version Notes**

```
==============================================================================
CC  600.perlbench_s(base) 602.gcc_s(base) 605.mcf_s(base) 625.x264_s(base, peak) 657.xz_s(base)
------------------------------------------------------------------------------
icc (ICC) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------
```

```
==============================================================================
CC  600.perlbench_s(peak) 602.gcc_s(peak) 605.mcf_s(peak) 657.xz_s(peak)
------------------------------------------------------------------------------
icc (ICC) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------
```

```
CXXC 620.omnetpp_s(base) 623.xalancbmk_s(base) 631.deepsjeng_s(base)
```

(Continued on next page)
SPEC CPU2017 Integer Speed Result

NEC Corporation
Express5800/R120h-2M (Intel Xeon Gold 5122)

SPECspeed2017_int_base = 7.88
SPECspeed2017_int_peak = 8.13

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

Compiler Version Notes (Continued)

641.leela_s(base)

icpc (ICC) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

==============================================================================
CXXC 620.omnetpp_s(peak) 623.xalancbmk_s(peak) 631.deepsjeng_s(peak)
641.leela_s(peak)

icpc (ICC) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

==============================================================================
FC 648.exchange2_s(base, peak)

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

Base Compiler Invocation

C benchmarks:
icc -m64 -std=c11

C++ benchmarks:
icpc -m64

Fortran benchmarks:
ifort -m64

Base Portability Flags

600.perlbench_s: -DSPEC_LP64 -DSPEC_LINUX_X64
602.gcc_s: -DSPEC_LP64
605.mcf_s: -DSPEC_LP64
620.omnetpp_s: -DSPEC_LP64
623.xalancbmk_s: -DSPEC_LP64 -DSPEC_LINUX
625.x264_s: -DSPEC_LP64
631.deepsjeng_s: -DSPEC_LP64
641.leela_s: -DSPEC_LP64
648.exchange2_s: -DSPEC_LP64

(Continued on next page)
SPEC CPU2017 Integer Speed Result

NEC Corporation

Express5800/R120h-2M (Intel Xeon Gold 5122)

SPECspeed2017_int_base = 7.88
SPECspeed2017_int_peak = 8.13

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

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

Base Portability Flags (Continued)

657.xz_s: -DSPEC_LP64

Base Optimization Flags

C benchmarks:
-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP
-L/usr/local/je5.0.1-64/lib -ljemalloc

C++ benchmarks:
-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-64/lib -ljemalloc

Fortran benchmarks:
-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs
-L/usr/local/je5.0.1-64/lib -ljemalloc

Peak Compiler Invocation

C benchmarks:
icc -m64 -std=c11

C++ benchmarks (except as noted below):
icpc -m64

623.xalancbmk_s: icpc -m32 -L/home/prasadj/specdev/IC18u2_Internal/lin_18_0_20180210/compiler/lib/ia32_lin

Fortran benchmarks:
ifort -m64

Peak Portability Flags

600.perlbench_s: -DSPEC_LP64 -DSPEC_LINUX_X64
602.gcc_s: -DSPEC_LP64
605.mcf_s: -DSPEC_LP64
620.omnetpp_s: -DSPEC_LP64
623.xalancbmk_s: -D_FILE_OFFSET_BITS=64 -DSPEC_LINUX
625.x264_s: -DSPEC_LP64

(Continued on next page)
**SPEC CPU2017 Integer Speed Result**

**NEC Corporation**
Express5800/R120h-2M (Intel Xeon Gold 5122)

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<tr>
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**Software Availability:** Mar-2018

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**Peak Portability Flags (Continued)**

631.deepsjeng_s: -DSPEC_LP64  
641.leela_s: -DSPEC_LP64  
648.exchange2_s: -DSPEC_LP64  
657.xz_s: -DSPEC_LP64

---

**Peak Optimization Flags**

**C benchmarks:**

600.perlbench_s: -Wl,-z, muldefs -prof-gen(pass 1) -prof-use(pass 2) -O2  
-xCORE-AVX512 -qopt-prefetch -ipo -O3  
-qopt-mem-layout-trans=3 -no-prec-div  
-DSPEC_SUPPRESS_OPENMP -qopenmp -DSPEC_OPENMP  
-fno-strict-overflow -L/usr/local/je5.0.1-64/lib  
-ljemalloc

602.gcc_s: -Wl,-z, muldefs -prof-gen(pass 1) -prof-use(pass 2) -O2  
-xCORE-AVX512 -qopt-prefetch -ipo -O3  
-qopt-mem-layout-trans=3 -no-prec-div  
-DSPEC_SUPPRESS_OPENMP -qopenmp -DSPEC_OPENMP  
-L/usr/local/je5.0.1-64/lib -ljemalloc

605.mcf_s: -Wl,-z, muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo  
-xCORE-AVX512 -O3 -no-prec-div -qopt-prefetch  
-qopt-mem-layout-trans=3 -DSPEC_SUPPRESS_OPENMP -qopenmp  
-DSPEC_OPENMP -L/usr/local/je5.0.1-64/lib -ljemalloc

625.x264_s: -Wl,-z, muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div  
-qopt-prefetch -qopt-mem-layout-trans=3 -qopenmp  
-DSPEC_OPENMP -L/usr/local/je5.0.1-64/lib -ljemalloc

657.xz_s: Same as 602.gcc_s

**C++ benchmarks:**

620.omnetpp_s: -Wl,-z, muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo  
-xCORE-AVX512 -O3 -no-prec-div -qopt-prefetch  
-qopt-mem-layout-trans=3 -DSPEC_SUPPRESS_OPENMP -qopenmp  
-DSPEC_OPENMP -L/usr/local/je5.0.1-64/lib -ljemalloc

623.xalancbmk_s: -Wl,-z, muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo  
-xCORE-AVX512 -O3 -no-prec-div -qopt-prefetch  
-qopt-mem-layout-trans=3 -DSPEC_SUPPRESS_OPENMP -qopenmp  
-DSPEC_OPENMP -L/usr/local/je5.0.1-32/lib -ljemalloc

(Continued on next page)
# SPEC CPU2017 Integer Speed Result

**NEC Corporation**  
Express5800/R120h-2M (Intel Xeon Gold 5122)  

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**Test Sponsor**: NEC Corporation  
**Tested by**: NEC Corporation  
**Test Date**: Nov-2018  
**Hardware Availability**: Aug-2017  
**Software Availability**: Mar-2018

## Peak Optimization Flags (Continued)

631.deepsjeng_s: basepeak = yes  
641.leela_s: basepeak = yes  

Fortran benchmarks:  
-Wl, -z, muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch  
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs  
-L/usr/local/je5.0.1-64/lib -ljemalloc

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-R120h-RevB.html

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  
http://www.spec.org/cpu2017/flags/NEC-Platform-Settings-V1.2-R120h-RevB.xml

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

Tested with SPEC CPU2017 v1.0.5 on 2018-11-17 06:15:35-0500.  
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