# SPEC® CPU2017 Integer Rate Result

## NEC Corporation

### Express5800/T110j-S (Intel Xeon E-2174G)

<table>
<thead>
<tr>
<th>SPECrate2017_int_base</th>
<th>SPECrate2017_int_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>30.7</td>
<td>32.9</td>
</tr>
</tbody>
</table>

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

### Hardware

- **CPU Name:** Intel Xeon E-2174G  
- **Max MHz.:** 4700  
- **Nominal:** 3800  
- **Enabled:** 4 cores, 1 chip, 2 threads/core  
- **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 core  
- **Other:** None  
- **Memory:** 64 GB (4 x 16 GB 2Rx8 PC4-2666V-E)  
- **Storage:** 1 x 1 TB SATA, 7200 RPM  
- **Other:** None

### Software

- **OS:** Red Hat Enterprise Linux Server release 7.5 (Maipo)  
- **Kernel:** 3.10.0-862.11.6.el7.x86_64  
- **Compiler:** C/C++: Version 18.0.2.199 of Intel C/C++  
- **Compiler for Fortran:** Version 18.0.2.199 of Intel Fortran  
- **Compiler for Linux:**  
- **Parallel:** No  
- **Firmware:** Version F07 10/31/2018 released Dec-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

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**SPECrates2017_int_base** (30.7)  
**SPECrates2017_int_peak** (32.9)
SPEC CPU2017 Integer Rate Result

NEC Corporation
Express5800/T110j-S (Intel Xeon E-2174G)

SPECrate2017_int_base = 30.7
SPECrate2017_int_peak = 32.9

Results Table

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<td><strong>20.6</strong></td>
<td>455</td>
<td>19.0</td>
</tr>
</tbody>
</table>

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

Submit Notes

The taskset mechanism was used to bind copies to processors. The config file option 'submit' was used to generate taskset 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"
IRQ balance service was stopped using "systemctl stop irqbalance.service"

General Notes

Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH = "/home/cpu2017/lib/ia32:/home/cpu2017/lib/intel64:/home/cpu2017/je5.0.1-32:/home/cpu2017/je5.0.1-64"

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)
NEC Corporation

Express5800/T110j-S (Intel Xeon E-2174G)

SPECrate2017_int_base = 30.7
SPECrate2017_int_peak = 32.9

General Notes (Continued)

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

Platform Notes

BIOS Settings:
VT-x: Disabled
Energy Efficient P-state: Disabled
Energy Efficient Turbo: Disabled
Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r5974 of 2018-05-19 9bcd8f2999c33d61f64985e45859ea9
running on t110js Fri Nov 30 10:27:57 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) E-2174G CPU @ 3.80GHz
  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 : 4
siblings : 8
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): 8
On-line CPU(s) list: 0-7
Thread(s) per core: 2
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) E-2174G CPU @ 3.80GHz
Stepping: 10
CPU MHz: 4492.089

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

**NEC Corporation**

**Express5800/T110j-S (Intel Xeon E-2174G)**

---

**SPECrate2017_int_base** = 30.7

**SPECrate2017_int_peak** = 32.9

---

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

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**Platform Notes (Continued)**

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<tr>
<th>CPU max MHz:</th>
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<td>CPU min MHz:</td>
<td>800.0000</td>
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<tr>
<td>L1d cache:</td>
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<td>L1i cache:</td>
<td>32K</td>
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<tr>
<td>L2 cache:</td>
<td>256K</td>
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<tr>
<td>L3 cache:</td>
<td>8192K</td>
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<tr>
<td>NUMA node0 CPU(s):</td>
<td>0-7</td>
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<tr>
<td>Flags:</td>
<td>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 aperfmperf eagerfpu pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16 xtr偶然 pcdm pcid sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abm 3dnowprefetch intel_pt ssbd ibpb stibp tpr_shadow vmmi flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm mpx rdtscp msr xsaveopt xsaveopt xgetbv1 dtherm ida arat pln pts hwp hwp_notify hwp_act_window hwp_epp spec_ctrl intel_stibp flush_l1d</td>
</tr>
</tbody>
</table>

/cache data

/cache size : 8192 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: 65455 MB  
node 0 free: 63575 MB  
node distances:

体贴 0

0: 10

From /proc/meminfo

MemTotal: 65895068 kB  
HugePages_Total: 0  
Hugepagesize: 2048 kB

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

os-release:
NAME="Red Hat Enterprise Linux Server"  
VERSION="7.5 (Maipo)"  
ID="rhel"  
ID_LIKE="fedora"  
VARIANT="Server"  
VARIANT_ID="server"  
VERSION_ID="7.5"  
PRETTY_NAME="Red Hat Enterprise Linux Server 7.5 (Maipo)"

(Continued on next page)
Platform Notes (Continued)

redhat-release: Red Hat Enterprise Linux Server release 7.5 (Maipo)
system-release: Red Hat Enterprise Linux Server release 7.5 (Maipo)
system-release-cpe: cpe:/o:redhat:enterprise_linux:7.5:ga:server

uname -a:
    Linux t110js 3.10.0-862.11.6.el7.x86_64 #1 SMP Fri Aug 10 16:55:11 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, __user pointer sanitization
CVE-2017-5715 (Spectre variant 2): Mitigation: IBRS (kernel)

run-level 3 Nov 30 10:22

SPEC is set to: /home/cpu2017

Filesystem Type Size Used Avail Use% Mounted on
/dev/sda3 ext4 909G 44G 819G 6% /

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. F07 10/31/2018
Memory:
    4x Samsung M391A2K43BB1-CTD 16 GB 2 rank 2667

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
CC  500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base) 525.x264_r(base)
    557.xz_r(base)
==============================================================================
icc (ICC) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

==============================================================================
CC  500.perlbench_r(peak) 502.gcc_r(peak) 505.mcf_r(peak) 525.x264_r(peak)
    557.xz_r(peak)
==============================================================================
icc (ICC) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

(Continued on next page)
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Express5800/T110j-S (Intel Xeon E-2174G)

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CPU2017 License: 9006
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Test Date: Nov-2018
Hardware Availability: Dec-2018
Software Availability: Aug-2018

Base Compiler Invocation

C benchmarks:
icc -m64 -std=c11

C++ benchmarks:
icpc -m64

Fortran benchmarks:
ifort -m64
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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

Base Optimization Flags

C benchmarks:
-Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-64/lib -ljemalloc

C++ benchmarks:
-Wl,-z,muldefs -xCORE-AVX2 -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-AVX2 -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 (except as noted below):
icc -m64 -std=c11

502.gcc_r.icc -m32 -std=c11 -L/home/prasadj/specdev/IC18u2_Internal/lin_18_0_20180210/compiler/lib/ia32_lin

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

523.xalancbmk_r.icpc -m32 -L/home/prasadj/specdev/IC18u2_Internal/lin_18_0_20180210/compiler/lib/ia32_lin

Fortran benchmarks:
ifort -m64
**SPEC CPU2017 Integer Rate Result**

**NEC Corporation**

Express5800/T110j-S (Intel Xeon E-2174G)

<table>
<thead>
<tr>
<th>SPECrate2017_int_base = 30.7</th>
<th>SPECrate2017_int_peak = 32.9</th>
</tr>
</thead>
</table>

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

### Peak Portability Flags

<table>
<thead>
<tr>
<th>Benchmark</th>
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<tr>
<td>500.perlbench_r</td>
<td>-DSPEC_LP64 -DSPEC_LINUX_X64</td>
</tr>
<tr>
<td>502.gcc_r</td>
<td>-D_FILE_OFFSET_BITS=64</td>
</tr>
<tr>
<td>505.mcf_r</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>520.omnetpp_r</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>523.xalancbmk_r</td>
<td>-D_FILE_OFFSET_BITS=64 -DSPEC_LINUX</td>
</tr>
<tr>
<td>525.x264_r</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>531.deepsjeng_r</td>
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<tr>
<td>541.leela_r</td>
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</tr>
<tr>
<td>548.exchange2_r</td>
<td>-DSPEC_LP64</td>
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<tr>
<td>557.xz_r</td>
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### Peak Optimization Flags

#### C benchmarks:

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<td>-Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo -xCORE-AVX2 -O3 -no-prec-div -qopt-mem-layout-trans=3 -fno-strict-overflow -L/usr/local/je5.0.1-64/lib -ljemalloc</td>
</tr>
<tr>
<td>502.gcc_r</td>
<td>-Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo -xCORE-AVX2 -O3 -no-prec-div -qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-32/lib -ljemalloc</td>
</tr>
<tr>
<td>505.mcf_r</td>
<td>basepeak = yes</td>
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<tr>
<td>525.x264_r</td>
<td>-Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo -xCORE-AVX2 -O3 -no-prec-div -qopt-mem-layout-trans=3 -fno-alias -L/usr/local/je5.0.1-64/lib -ljemalloc</td>
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<td>557.xz_r</td>
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#### C++ benchmarks:

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(Continued on next page)
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NEC Corporation
Express5800/T110j-S (Intel Xeon E-2174G)

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Peak Optimization Flags (Continued)

Fortran benchmarks:

548.exchange2_r: 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.

Tested with SPEC CPU2017 v1.0.5 on 2018-11-29 20:27:56-0500.
Report generated on 2018-12-26 12:56:07 by CPU2017 PDF formatter v6067.
Originally published on 2018-12-25.