NEC Corporation

Express5800/R120h-2M (Intel Xeon Gold 6136)

**SPECrate2017_int_base = 151**

**SPECrate2017_int_peak = 160**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
</tr>
</thead>
<tbody>
<tr>
<td>500.perlbench_r</td>
<td>48</td>
</tr>
<tr>
<td>502.gcc_r</td>
<td>48</td>
</tr>
<tr>
<td>505.mcf_r</td>
<td>48</td>
</tr>
<tr>
<td>520.omnetpp_r</td>
<td>48</td>
</tr>
<tr>
<td>523.xalancbmk_r</td>
<td>48</td>
</tr>
<tr>
<td>525.x264_r</td>
<td>48</td>
</tr>
<tr>
<td>531.deepsjeng_r</td>
<td>48</td>
</tr>
<tr>
<td>541.leela_r</td>
<td>48</td>
</tr>
<tr>
<td>548.exchange2_r</td>
<td>48</td>
</tr>
<tr>
<td>557.xz_r</td>
<td>48</td>
</tr>
</tbody>
</table>

**Hardware**

- **CPU Name:** Intel Xeon Gold 6136
- **Max MHz.:** 3700
- **Nominal:** 3000
- **Enabled:** 24 cores, 2 chips, 2 threads/core
- **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
- **Memory:** 192 GB (24 x 8 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)
- **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:** No
- **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 6136)**

<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>Copies</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.perlbench_r</td>
<td>48</td>
<td>654</td>
<td>117</td>
<td>652</td>
<td>117</td>
<td>659</td>
<td>116</td>
<td>48</td>
<td>547</td>
<td>140</td>
<td>550</td>
<td>139</td>
<td>552</td>
<td>138</td>
</tr>
<tr>
<td>502.gcc_r</td>
<td>48</td>
<td>525</td>
<td>129</td>
<td>532</td>
<td>128</td>
<td>536</td>
<td>127</td>
<td>48</td>
<td>438</td>
<td>155</td>
<td>439</td>
<td>155</td>
<td>439</td>
<td>155</td>
</tr>
<tr>
<td>505.mcf_r</td>
<td>48</td>
<td>404</td>
<td>192</td>
<td>413</td>
<td>188</td>
<td>422</td>
<td>184</td>
<td>48</td>
<td>404</td>
<td>192</td>
<td>413</td>
<td>188</td>
<td>422</td>
<td>184</td>
</tr>
<tr>
<td>520.omnetpp_r</td>
<td>48</td>
<td>677</td>
<td>93.0</td>
<td>674</td>
<td>93.5</td>
<td>700</td>
<td>90.0</td>
<td>48</td>
<td>677</td>
<td>93.0</td>
<td>674</td>
<td>93.5</td>
<td>700</td>
<td>90.0</td>
</tr>
<tr>
<td>523.xalancbmk_r</td>
<td>48</td>
<td>327</td>
<td>155</td>
<td>328</td>
<td>155</td>
<td>329</td>
<td>154</td>
<td>48</td>
<td>270</td>
<td>188</td>
<td>270</td>
<td>187</td>
<td>271</td>
<td>187</td>
</tr>
<tr>
<td>525.x264_r</td>
<td>48</td>
<td>268</td>
<td>313</td>
<td>270</td>
<td>311</td>
<td>272</td>
<td>309</td>
<td>48</td>
<td>268</td>
<td>313</td>
<td>270</td>
<td>311</td>
<td>272</td>
<td>309</td>
</tr>
<tr>
<td>531.deepsjeng_r</td>
<td>48</td>
<td>409</td>
<td>134</td>
<td>420</td>
<td>131</td>
<td>420</td>
<td>131</td>
<td>48</td>
<td>409</td>
<td>134</td>
<td>420</td>
<td>131</td>
<td>420</td>
<td>131</td>
</tr>
<tr>
<td>541.leela_r</td>
<td>48</td>
<td>617</td>
<td>129</td>
<td>617</td>
<td>129</td>
<td>617</td>
<td>129</td>
<td>48</td>
<td>611</td>
<td>130</td>
<td>613</td>
<td>130</td>
<td>621</td>
<td>128</td>
</tr>
<tr>
<td>548.exchange2_r</td>
<td>48</td>
<td>429</td>
<td>293</td>
<td>429</td>
<td>293</td>
<td>429</td>
<td>293</td>
<td>48</td>
<td>429</td>
<td>293</td>
<td>429</td>
<td>293</td>
<td>429</td>
<td>293</td>
</tr>
<tr>
<td>557.xz_r</td>
<td>48</td>
<td>510</td>
<td>102</td>
<td>513</td>
<td>101</td>
<td>513</td>
<td>101</td>
<td>48</td>
<td>510</td>
<td>102</td>
<td>513</td>
<td>101</td>
<td>513</td>
<td>101</td>
</tr>
</tbody>
</table>

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

### 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"

### 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
```
runcpu command invoked through numactl i.e.:
```
numactl --interleave=all runcpu <etc>
```

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)
SPEC CPU2017 Integer Rate Result

NEC Corporation

Express5800/R120h-2M (Intel Xeon Gold 6136)

SPECrate2017_int_base = 151
SPECrate2017_int_peak = 160

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

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:
Thermal Configuration: Maximum Cooling
Workload Profile: General Throughput Compute
Memory Patrol Scrubbing:Disabled
LLC Dead Line Allocation: Disabled
LLC Prefetch: Enabled
Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r5974 of 2018-05-19 9bcd8f2999c33d61f64985e45859ea9
running on r120h2m Mon Aug 27 15:46:51 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 6136 CPU @ 3.00GHz
 2 "physical id"s (chips)
  48 "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 : 12
siblings : 24
physical 0: cores 0 1 2 3 4 9 10 16 18 19 25 26
physical 1: cores 0 1 2 3 4 9 10 16 18 19 25 26

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 48
On-line CPU(s) list: 0-47
Thread(s) per core: 2
Core(s) per socket: 12
Socket(s): 2
NUMA node(s): 4
Vendor ID: GenuineIntel
CPU family: 6
Model: 85

(Continued on next page)
SPEC CPU2017 Integer Rate Result

**NEC Corporation**

**Express5800/R120h-2M (Intel Xeon Gold 6136)**

**SPECrate2017_int_base** = 151

**SPECrate2017_int_peak** = 160

<table>
<thead>
<tr>
<th>CPU2017 License:</th>
<th>9006</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor:</td>
<td>NEC Corporation</td>
</tr>
<tr>
<td>Tested by:</td>
<td>NEC Corporation</td>
</tr>
<tr>
<td>Test Date:</td>
<td>Aug-2018</td>
</tr>
<tr>
<td>Hardware Availability:</td>
<td>Jun-2018</td>
</tr>
<tr>
<td>Software Availability:</td>
<td>Mar-2018</td>
</tr>
</tbody>
</table>

**Platform Notes (Continued)**

- **Model name:** Intel(R) Xeon(R) Gold 6136 CPU @ 3.00GHz
- **Stepping:** 4
- **CPU MHz:** 3000.000
- **BogoMIPS:** 6000.00
- **Virtualization:** VT-x
- **L1d cache:** 32K
- **L1i cache:** 32K
- **L2 cache:** 1024K
- **L3 cache:** 25344K
- **NUMA node0 CPU(s):** 0-5,24-29
- **NUMA node1 CPU(s):** 6-11,30-35
- **NUMA node2 CPU(s):** 12-17,36-41
- **NUMA node3 CPU(s):** 18-23,42-47
- **Flags:** fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
- **/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: 4 nodes (0-3)

  - node 0 cpus: 0 1 2 3 4 5 24 25 26 27 28 29
  - node 0 size: 48811 MB
  - node 0 free: 47459 MB
  - node 1 cpus: 6 7 8 9 10 11 30 31 32 33 34 35
  - node 1 size: 49152 MB
  - node 1 free: 47886 MB
  - node 2 cpus: 12 13 14 15 16 17 36 37 38 39 40 41
  - node 2 size: 49152 MB
  - node 2 free: 48008 MB
  - node 3 cpus: 18 19 20 21 22 23 42 43 44 45 46 47
  - node 3 size: 49151 MB
  - node 3 free: 48011 MB

  node distances:
  - node 0 1 2 3
  - 0: 10 21 31 31
  - 1: 21 10 31 31
  - 2: 31 31 10 21

(Continued on next page)
SPEC CPU2017 Integer Rate Result

NEC Corporation

Express5800/R120h-2M (Intel Xeon Gold 6136)

SPECrate2017_int_base = 151
SPECrate2017_int_peak = 160

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

Platform Notes (Continued)

3:  31  31  21  10

From /proc/meminfo
  MemTotal:       197745364 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

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 Aug 27 15:41

SPEC is set to: /home/cpu2017
  Filesystem Type Size Used Avail Use% Mounted on
  /dev/sda3 ext4 909G 396G 467G 46% /

Advanced 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:
    24x HPE 876319-081 8 GB 2 rank 2666

(End of data from sysinfo program)
SPEC CPU2017 Integer Rate Result

NEC Corporation

Express5800/R120h-2M (Intel Xeon Gold 6136)

SPECrate2017_int_base = 151
SPECrate2017_int_peak = 160

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

Test Date: Aug-2018
Hardware Availability: Jun-2018
Software Availability: Mar-2018

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.
==============================================================================
CXXC 520.omnetpp_r(base) 523.xalancbmk_r(base) 531.deepsjeng_r(base)  
541.leela_r(base)
==============================================================================
icpc (ICC) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
==============================================================================
CXXC 520.omnetpp_r(peak) 523.xalancbmk_r(peak) 531.deepsjeng_r(peak)  
541.leela_r(peak)
==============================================================================
icpc (ICC) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

==============================================================================
FC  548.exchange2_r(base)
==============================================================================
ifort (IFORT) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

==============================================================================
FC  548.exchange2_r(peak)
==============================================================================
ifort (IFORT) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
SPEC CPU2017 Integer Rate Result

NEC Corporation
Express5800/R120h-2M (Intel Xeon Gold 6136)

| SPECrate2017_int_base = 151 |
| SPECrate2017_int_peak = 160 |

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

Test Date: Aug-2018
Hardware Availability: Jun-2018
Software Availability: Mar-2018

Base Compiler Invocation

C benchmarks:
icc -m64 -std=c11

C++ benchmarks:
icpc -m64

Fortran benchmarks:
ifort -m64

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:
-W1,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-64/lib -ljemalloc

C++ benchmarks:
-W1,-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:
-W1,-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

Base Compiler Invocation

C benchmarks:
icc -m64 -std=c11

C++ benchmarks:
icpc -m64

Fortran benchmarks:
ifort -m64
SPEC CPU2017 Integer Rate Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

NEC Corporation
Express5800/R120h-2M (Intel Xeon Gold 6136)

SPECrate2017_int_base = 151
SPECrate2017_int_peak = 160

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

Test Date: Aug-2018
Hardware Availability: Jun-2018
Software Availability: Mar-2018

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

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: -D_FILE_OFFSET_BITS=64 -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

Peak Optimization Flags

C benchmarks:
500.perlbench_r: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xCORE-AVX512 -O3 -no-prec-div -qopt-mem-layout-trans=3
-fno-strict-overflow -L/usr/local/je5.0.1-64/lib
-ljemalloc

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

505.mcf_r: basepeak = yes

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

**NEC Corporation**

Express5800/R120h-2M (Intel Xeon Gold 6136)

<table>
<thead>
<tr>
<th>SPECrate2017_int_base</th>
<th>151</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate2017_int_peak</td>
<td>160</td>
</tr>
</tbody>
</table>

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

### Peak Optimization Flags (Continued)

525.x264_r: basepeak = yes

557.xz_r: basepeak = yes

**C++ benchmarks:**

520.omnetpp_r: basepeak = yes

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

531.deepsjeng_r: basepeak = yes

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

**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-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

---

SPEC is a registered trademark of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

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 2018-08-27 02:46:51-0400.  
Originally published on 2018-09-18.