## SPEC® CPU2017 Integer Speed Result

**NEC Corporation**

**Express5800/R110i-1 (Intel Pentium G4560)**

<table>
<thead>
<tr>
<th>SPECspeed2017_int_base</th>
<th>6.25</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECspeed2017_int_peak</td>
<td>6.59</td>
</tr>
</tbody>
</table>

### Hardware

<table>
<thead>
<tr>
<th>CPU Name:</th>
<th>Intel Pentium G4560</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max MHz.:</td>
<td>3500</td>
</tr>
<tr>
<td>Nominal:</td>
<td>3500</td>
</tr>
<tr>
<td>Enabled:</td>
<td>2 cores, 1 chip</td>
</tr>
<tr>
<td>Orderable:</td>
<td>1 chip</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>256 KB I+D on chip per core</td>
</tr>
<tr>
<td>L3:</td>
<td>3 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Other:</td>
<td>None</td>
</tr>
<tr>
<td>Memory:</td>
<td>64 GB (4 x 16 GB 2Rx8 PC4-2400T-E)</td>
</tr>
<tr>
<td>Storage:</td>
<td>1 x 1 TB SATA, 7200 RPM</td>
</tr>
<tr>
<td>Other:</td>
<td>None</td>
</tr>
</tbody>
</table>

### Software

<table>
<thead>
<tr>
<th>OS:</th>
<th>Red Hat Enterprise Linux Server release 7.4 (Maipo)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compiler:</td>
<td>C/C++: Version 18.0.0.128 of Intel C/C++ Compiler for Linux; Fortran: Version 18.0.0.128 of Intel Fortran Compiler for Linux</td>
</tr>
<tr>
<td>Parallel:</td>
<td>Yes</td>
</tr>
<tr>
<td>Firmware:</td>
<td>Version 5.0.3006 02/28/2018 released Apr-2018</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>32/64-bit</td>
</tr>
<tr>
<td>Other:</td>
<td>jemalloc memory allocator library V5.0.1</td>
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</tbody>
</table>

### Test Information

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

### Performance Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>SPECspeed2017_int_base</th>
<th>SPECspeed2017_int_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>perlbench_s</td>
<td>2</td>
<td>6.30</td>
<td>8.82</td>
</tr>
<tr>
<td>gcc_s</td>
<td>2</td>
<td>9.06</td>
<td>9.74</td>
</tr>
<tr>
<td>mcf_s</td>
<td>2</td>
<td>9.81</td>
<td>9.81</td>
</tr>
<tr>
<td>omnetpp_s</td>
<td>2</td>
<td>4.37</td>
<td>4.83</td>
</tr>
<tr>
<td>xalancbmk_s</td>
<td>2</td>
<td>8.12</td>
<td>9.12</td>
</tr>
<tr>
<td>x264_s</td>
<td>2</td>
<td>7.78</td>
<td>9.71</td>
</tr>
<tr>
<td>deepsjeng_s</td>
<td>2</td>
<td>4.87</td>
<td>5.04</td>
</tr>
<tr>
<td>leela_s</td>
<td>2</td>
<td>3.92</td>
<td>3.94</td>
</tr>
<tr>
<td>exchange2_s</td>
<td>2</td>
<td>8.29</td>
<td>8.59</td>
</tr>
<tr>
<td>xz_s</td>
<td>2</td>
<td>4.49</td>
<td>4.56</td>
</tr>
</tbody>
</table>

---

**Notes:**
- Results are based on SPECspeed2017_int_base (6.25) and SPECspeed2017_int_peak (6.59) as of the test date.
- Hardware and software configurations are specified to ensure reproducibility.

---

**Source:**
- SPEC® CPU2017 Benchmark
- NEC Corporation

---

**Contact:**
- info@spec.org
- https://www.spec.org
SPEC CPU2017 Integer Speed Result

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NEC Corporation
Express5800/R110i-1 (Intel Pentium G4560)

SPECspeed2017_int_base = 6.25
SPECspeed2017_int_peak = 6.59

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

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>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>
</tr>
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<tbody>
<tr>
<td>600.perlbench_s</td>
<td>2</td>
<td>330</td>
<td>5.37</td>
<td>329</td>
<td>5.39</td>
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<td>5.37</td>
<td>2</td>
<td>282</td>
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<td>6.30</td>
<td>282</td>
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<tr>
<td>602.gcc_s</td>
<td>2</td>
<td>451</td>
<td>8.82</td>
<td>451</td>
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<td>8.82</td>
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<tr>
<td>605.mcf_s</td>
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<td>9.74</td>
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<td>9.81</td>
<td>481</td>
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<tr>
<td>620.omnetpp_s</td>
<td>2</td>
<td>374</td>
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<tr>
<td>623.xalancbmk_s</td>
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<td>175</td>
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<td>174</td>
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<td>9.71</td>
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<td>9.73</td>
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<td></td>
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<tr>
<td>625.x264_s</td>
<td>2</td>
<td>227</td>
<td>7.78</td>
<td>222</td>
<td>7.78</td>
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<td>7.77</td>
<td>227</td>
<td>7.78</td>
<td>227</td>
<td>7.78</td>
<td></td>
<td></td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
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<td>294</td>
<td>4.87</td>
<td>294</td>
<td>4.87</td>
<td>294</td>
<td>4.87</td>
<td>2</td>
<td>285</td>
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<td>284</td>
<td>5.04</td>
<td>284</td>
<td>5.04</td>
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<td></td>
</tr>
<tr>
<td>641.leela_s</td>
<td>2</td>
<td>435</td>
<td>3.92</td>
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<td>3.91</td>
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<td>3.94</td>
<td>433</td>
<td>3.94</td>
<td></td>
<td></td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>2</td>
<td>355</td>
<td>8.29</td>
<td>355</td>
<td>8.29</td>
<td>355</td>
<td>8.29</td>
<td>2</td>
<td>355</td>
<td>8.29</td>
<td>354</td>
<td>8.29</td>
<td>355</td>
<td>8.29</td>
<td></td>
<td></td>
</tr>
<tr>
<td>657.xz_s</td>
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<td>1377</td>
<td>4.49</td>
<td>1376</td>
<td>4.49</td>
<td>1377</td>
<td>4.49</td>
<td>2</td>
<td>1355</td>
<td>4.56</td>
<td>1355</td>
<td>4.56</td>
<td>1354</td>
<td>4.56</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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,scatter"
LD_LIBRARY_PATH = "/home/cpu2017/ib/linux32:/home/cpu2017/ib/linux64:/home/cpu2017/ib/xe/0.1-32:/home/cpu2017/ib/xe/0.1-64"
OMP_STACKSIZE = "192M"

Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM memory using Redhat Enterprise Linux 7.4
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

ejemalloc: configured and built at default for 32bit (i686) and 64bit (x86_64) targets;
ejemalloc: built with the RedHat Enterprise 7.4, and the system compiler gcc 4.8.5;

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.
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**Test Sponsor:** NEC Corporation  
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<tr>
<td>Hardware Availability:</td>
<td>Apr-2017</td>
</tr>
<tr>
<td>Software Availability:</td>
<td>Mar-2018</td>
</tr>
</tbody>
</table>

**Platform Notes**

BIOS Settings:
- Power Management Policy: Custom
- Energy Performance: Performance
- Hyper-Threading: Disabled

Sysinfo program /home/cpu2017/bin/sysinfo
- Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bcc091c0f
- running on r11011 Tue Oct 30 12:10:39 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) Pentium(R) CPU G4560 @ 3.50GHz
  1 "physical id"s (chips)
  2 "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 : 2
  - siblings : 2
  - physical 0: cores 0 1

From lscpu:
- Architecture: x86_64
- CPU op-mode(s): 32-bit, 64-bit
- Byte Order: Little Endian
- CPU(s): 2
- On-line CPU(s) list: 0,1
- Thread(s) per core: 1
- Core(s) per socket: 2
- Socket(s): 1
- NUMA node(s): 1
- Vendor ID: GenuineIntel
- CPU family: 6
- Model: 158
- Model name: Intel(R) Pentium(R) CPU G4560 @ 3.50GHz
- Stepping: 9
- CPU MHz: 3355.625
- CPU max MHz: 3500.0000
- CPU min MHz: 800.0000
- BogoMIPS: 7008.00
- Virtualization: VT-x
- L1d cache: 32K
- L1i cache: 32K
- L2 cache: 256K
- L3 cache: 3072K
- NUMA node0 CPU(s): 0,1

(Continued on next page)
SPEC CPU2017 Integer Speed Result

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Express5800/R110i-1 (Intel Pentium G4560)  

| SPECspeed2017_int_base | 6.25 |
| SPECspeed2017_int_peak  | 6.59 |

CPU2017 License: 9006
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Platform Notes (Continued)

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 art arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc
aperfmperf eagerfpu pni pclmulqdq dtes64 monitor ds_cpl vmx est tm2 ssse3 cx16 xtpr
pcmc pcpu sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave rdrand
lahf_lm abm 3dnowprefetch epb invpcid_single intel_pt spec_ctrl ibpb_support
tpr_shadow vmx flexpriority ept vpid fsgrbase tsc_adjust smep erms invpcid mpx
rdseed smap clflushopt xsaveopt xsavec xgetbv1 dtherm arat pln pts hwp hwp_notify
hwp_act_window hwp_epp

/proc/cpuinfo
  cache size : 3072 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
  node 0 size: 65475 MB
  node 0 free: 63627 MB
  node distances:
    node   0
    0:  10

From /proc/meminfo
  MemTotal:       65917212 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 r110i1 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

run-level 3 Oct 30 12:05

(Continued on next page)
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</tr>
</tbody>
</table>

---

**Platform Notes (Continued)**

SPEC is set to: /home/cpu2017

```
Filesystem   Type Size Used Avail Use% Mounted on
/dev/sda3     ext4  909G  98G  765G  12% /
```

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

(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) 18.0.0 20170811

Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

```
CC 600.perlbench_s(peak) 602.gcc_s(peak) 605.mcf_s(peak) 657.xz_s(peak)
```

icc (ICC) 18.0.0 20170811

Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

```
CXXC 620.omnetpp_s(base) 623.xalancbmk_s(base) 631.deepsjeng_s(base) 641.leela_s(base)
```

icpc (ICC) 18.0.0 20170811

Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

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

icpc (ICC) 18.0.0 20170811

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(Continued on next page)
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SPECspeed2017_int_base = 6.25
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Compiler Version Notes (Continued)

FC 648.exchange2_s(base, peak)

ifort (IFORT) 18.0.0 20170811
Copyright (C) 1985–2017 Intel Corporation. All rights reserved.

Base Compiler Invocation

C benchmarks:
icc

C++ benchmarks:
icpc

Fortran benchmarks:
ifort

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
657.xz_s: -DSPEC_LP64

Base Optimization Flags

C benchmarks:
-W1,-z,muldefs -xSSE4.2 -ipo -O3 -no-prec-div -qopt-prefetch
-qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP
-L/usr/local/je5.0.1-64/lib -ljemalloc

(Continued on next page)
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</tr>
<tr>
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</tr>
</tbody>
</table>

**Base Optimization Flags (Continued)**

C++ benchmarks:
- `Wl,-z,muldefs` `-xSSE4.2` `-ipo` `-O3` `-no-prec-div` `-qopt-prefetch`
- `-qopt-mem-layout-trans=3` `-L/usr/local/je5.0.1-64/lib` `-ljemalloc`

Fortran benchmarks:
- `Wl,-z,muldefs` `-xSSE4.2` `-ipo` `-O3` `-no-prec-div` `-qopt-prefetch`
- `-qopt-mem-layout-trans=3` `-nostandard-realloc-lhs` `-align array32byte`
- `-L/usr/local/je5.0.1-64/lib` `-ljemalloc`

**Base Other Flags**

C benchmarks:
- `-m64` `-std=c11`

C++ benchmarks:
- `-m64`

Fortran benchmarks:
- `-m64`

**Peak Compiler Invocation**

C benchmarks:
- `icc`

C++ benchmarks:
- `icpc`

Fortran benchmarks:
- `ifort`

**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`

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Tested by: NEC Corporation

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

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
-xSSE4.2 -qopt-prefetch -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -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
-xSSE4.2 -qopt-prefetch -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -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
-xSSE4.2 -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 -xSSE4.2 -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
-xSSE4.2 -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: -L/opt/intel/compilers_and_libraries_2018/linux/lib/ia32
-Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xSSE4.2 -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/R110i-1 (Intel Pentium G4560)

<table>
<thead>
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<th>SPECspeed2017_int_base</th>
<th>6.25</th>
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<tr>
<td>SPECspeed2017_int_peak</td>
<td>6.59</td>
</tr>
</tbody>
</table>

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

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**Peak Optimization Flags (Continued)**

631.deepsjeng_s: Same as 620.omnetpp_s

641.leela_s: Same as 620.omnetpp_s

Fortran benchmarks:
- `-Wl,-z,muldefs -xSSE4.2 -ipo -O3 -no-prec-div -qopt-prefetch`
- `-qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte`
- `-L/usr/local/je5.0.1-64/lib -ljemalloc`

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**Peak Other Flags**

C benchmarks:
- `-m64 -std=c11`

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

623.xalancbmk_s: `-m32`

Fortran benchmarks:
- `-m64`

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

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