# SPEC CPU®2017 Integer Speed Result

**Inspru Corporation**

**Inspru NF8480M5 (Intel Xeon Platinum 8280M)**

<table>
<thead>
<tr>
<th>SPECspeed®2017_int_base</th>
<th>11.6</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECspeed®2017_int_peak</td>
<td>11.9</td>
</tr>
</tbody>
</table>

**CPU2017 License:** 3358  
**Test Date:** Sep-2020  
**Test Sponsor:** Inspru Corporation  
**Hardware Availability:** Feb-2020  
**Tested by:** Inspru Corporation  
**Software Availability:** Apr-2020

## Threads

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
<td>112</td>
</tr>
<tr>
<td>602.gcc_s</td>
<td>112</td>
</tr>
<tr>
<td>605.mcf_s</td>
<td>112</td>
</tr>
<tr>
<td>620.omnetpp_s</td>
<td>112</td>
</tr>
<tr>
<td>623.xalancbmk_s</td>
<td>112</td>
</tr>
<tr>
<td>625.x264_s</td>
<td>112</td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>112</td>
</tr>
<tr>
<td>641.leela_s</td>
<td>112</td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>112</td>
</tr>
<tr>
<td>657.xz_s</td>
<td>112</td>
</tr>
</tbody>
</table>

## SPECspeed®2017_int_base (11.6)  
## SPECspeed®2017_int_peak (11.9)

### Hardware

- **CPU Name:** Intel Xeon Platinum 8280M  
- **Max MHz:** 4000  
- **Nominal:** 2700  
- **Enabled:** 112 cores, 4 chips  
- **Orderable:** 2,4 chips  
- **Cache L1:** 32 KB I + 32 KB D on chip per core  
- **L2:** 1 MB I+D on chip per core  
- **L3:** 38.5 MB I+D on chip per chip  
- **Memory:** 768 GB (24 x 32 GB 2Rx4 PC4-2933Y-R)  
- **Storage:** 1 x 1 TB SATA SSD  
- **Other:** None

### Software

- **OS:** Red Hat Enterprise Linux release 8.1 (Ootpa)  
- **Compiler:** C/C++: Version 19.1.1.217 of Intel C/C++ Compiler Build 20200306 for Linux;  
  Fortran: Version 19.1.1.217 of Intel Fortran Compiler Build 20200306 for Linux  
- **Firmware:** Version 4.1.09 released Sep-2019  
- **File System:** xfs  
- **System State:** Run level 3 (multi-user)  
- **Base Pointers:** 64-bit  
- **Peak Pointers:** 64-bit  
- **Other:** jemalloc memory allocator V5.0.1  
- **Power Management:** BIOS and OS set to prefer performance at the cost of additional power usage.
## SPEC CPU®2017 Integer Speed Result

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<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>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
<td>112</td>
<td>256</td>
<td>6.95</td>
<td>253</td>
<td>7.00</td>
<td><strong>254</strong></td>
<td><strong>6.99</strong></td>
<td>112</td>
<td>225</td>
<td>7.89</td>
<td><strong>224</strong></td>
<td><strong>7.94</strong></td>
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<tr>
<td>602.gcc_s</td>
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<td>372</td>
<td>10.7</td>
<td><strong>375</strong></td>
<td><strong>10.6</strong></td>
<td>375</td>
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<td>605.mcf_s</td>
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<td><strong>251</strong></td>
<td><strong>18.8</strong></td>
<td>252</td>
<td>18.7</td>
<td>112</td>
<td>250</td>
<td>18.9</td>
<td><strong>251</strong></td>
<td><strong>18.8</strong></td>
<td>252</td>
<td>18.7</td>
</tr>
<tr>
<td>620.omnetpp_s</td>
<td>112</td>
<td>146</td>
<td>11.2</td>
<td>151</td>
<td>10.8</td>
<td><strong>148</strong></td>
<td><strong>11.0</strong></td>
<td>112</td>
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<td>11.2</td>
<td>151</td>
<td>10.8</td>
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<td><strong>11.0</strong></td>
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<tr>
<td>623.xalanchmk_s</td>
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<td><strong>13.8</strong></td>
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<td>625.x264_s</td>
<td>112</td>
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<td>107</td>
<td>16.5</td>
<td>107</td>
<td>16.5</td>
<td>112</td>
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<td>103</td>
<td>17.1</td>
<td><strong>103</strong></td>
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<td>631.deepsjeng_s</td>
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<td>4.93</td>
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<td>173</td>
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<tr>
<td>657.xz_s</td>
<td>112</td>
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<td>235</td>
<td>26.3</td>
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<td><strong>26.3</strong></td>
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<td>26.3</td>
<td>235</td>
<td>26.3</td>
<td><strong>235</strong></td>
<td><strong>26.3</strong></td>
</tr>
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**Compiler Notes**

The inconsistent Compiler version information under Compiler Version section is due to a discrepancy in Intel Compiler. The correct version of C/C++ compiler is: Version 19.1.1.217 Build 20200306 Compiler for Linux. The correct version of Fortran compiler is: Version 19.1.1.217 Build 20200306 Compiler for Linux.

**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"

SCALING_GOVERNOR set to Performance

**Environment Variables Notes**

Environment variables set by runcpu before the start of the run:

- KMP_AFFINITY = "granularity=fine,scatter"
- LD_LIBRARY_PATH = "/home/CPU2017/lib/intel64;/home/CPU2017/je5.0.1-64"
- MALLOC_CONF = "retain:true"
- OMP_STACKSIZE = "192M"
SPEC CPU®2017 Integer Speed Result

Inspur Corporation
Inspur NF8480M5 (Intel Xeon Platinum 8280M)

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CPU2017 License: 3358  Test Date: Sep-2020
Test Sponsor: Inspur Corporation  Hardware Availability: Feb-2020
Tested by: Inspur Corporation  Software Availability: Apr-2020

General Notes

Binaries compiled on a system with 1x Intel Core i9-7980XE CPU + 64GB RAM memory using Redhat Enterprise Linux 8.0
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>

NA: 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.


Platform Notes

BIOS configuration:
ENERGY_PERF_BIAS_CFG mode set to Performance
Hardware Prefetch set to Disable
VT Support set to Disable
C1E Support set to Disable
IMC (Integrated memory controller) Interleaving set to 1-way
SNC NUMA Cluster (SNC) set to Enable
Intel Hyper Threading Technology set to Disable

Sysinfo program /home/CPU2017/bin/sysinfo
Rev: r6356 of 2019-08-21 295195f888a3d7eddb1e6e46a485a0011
running on localhost.localdomain Mon Sep 21 10:09:31 2020

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) Platinum 8280M CPU @ 2.70GHz
   4 "physical id"s (chips)
   112 "processors"
   cores, siblings (Caution: counting these is hw and system dependent. The following

(Continued on next page)
SPEC CPU®2017 Integer Speed Result

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Inspur NF8480M5 (Intel Xeon Platinum 8280M)

**SPECspeed®2017_int_base = 11.6**
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<td>Software Availability: Apr-2020</td>
</tr>
</tbody>
</table>

Platform Notes (Continued)

Excerpts from /proc/cpuinfo might not be reliable. Use with caution.

- CPU cores: 28
- Siblings: 28
- Physical 0: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27
- Physical 1: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27
- Physical 2: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27
- Physical 3: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27

From lscpu:

- Architecture: x86_64
- CPU op-mode(s): 32-bit, 64-bit
- Byte Order: Little Endian
- CPU(s): 112
- On-line CPU(s) list: 0-111
- Thread(s) per core: 1
- Core(s) per socket: 28
- Socket(s): 4
- NUMA node(s): 4
- Vendor ID: GenuineIntel
- CPU family: 6
- Model: 85
- Model name: Intel(R) Xeon(R) Platinum 8280M CPU @ 2.70GHz
- Stepping: 6
- CPU MHz: 2796.675
- CPU max MHz: 4000.0000
- CPU min MHz: 1000.0000
- BogoMIPS: 5400.00
- Virtualization: VT-x
- L1d cache: 32K
- L1i cache: 32K
- L2 cache: 1024K
- L3 cache: 39424K
- NUMA node0 CPU(s): 0-27
- NUMA node1 CPU(s): 28-55
- NUMA node2 CPU(s): 56-83
- NUMA node3 CPU(s): 84-111
- Flags: fpu vmx 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 cpuid aperfmperf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg 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 cpuid_fault epb cat_l3 cdp_c3 invpcid_single intel_pme ssbd ibrs ibpb stibp ibrs_enabled tpr_shadow vnmi...
Inspur Corporation

Inspur NF8480M5 (Intel Xeon Platinum 8280M)

**SPEC CPU®2017 Integer Speed Result**

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<th>Spec</th>
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<table>
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<th>CPU2017 License:</th>
<th>3358</th>
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<th>Sep-2020</th>
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<td>Inspur Corporation</td>
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</tbody>
</table>

**Platform Notes (Continued)**

```
flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm
cqm mpx rdt_a avx512f avx512dq rdseed adx smap clflushopt clwb intel_pt avx512cd
avx512bw avx512vl xsaveopt xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbb_total
cqm_mbb_local dtherm ida arat pln pts hwp hwp_act_window hwp_epp hwp_pkg_req pku
ospke avx512_vnni md_clear flush_l1d arch_capabilities
```

```
/pro/cpuintoinfo cache data
cache size : 39424 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 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27
node 0 size: 192113 MB
node 0 free: 191516 MB
node 1 cpus: 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52
53 54 55
node 1 size: 193530 MB
node 1 free: 193281 MB
node 2 cpus: 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
81 82 83
node 2 size: 193530 MB
node 2 free: 193322 MB
node 3 cpus: 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105
106 107 108 109 110 111
node 3 size: 193529 MB
node 3 free: 193325 MB
node distances:
node 0 1 2 3
 0: 10 21 21 21
 1: 21 10 21 21
 2: 21 21 10 21
 3: 21 21 21 10
```

```
From /proc/meminfo
MemTotal:  791249496 kB
HugePages_Total:       0
Hugepagesize:       2048 kB
```

```
From /etc/*release* /etc/*version*
os-release:
  NAME="Red Hat Enterprise Linux"
  VERSION="8.1 (Ootpa)"
  ID="rhel"
  ID_LIKE="fedora"
  VERSION_ID="8.1"
  PLATFORM_ID="platform:el8"
```

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Platform Notes (Continued)

PRETTY_NAME="Red Hat Enterprise Linux 8.1 (Ootpa)"
ANSI_COLOR="0;31"
redhat-release: Red Hat Enterprise Linux release 8.1 (Ootpa)
system-release: Red Hat Enterprise Linux release 8.1 (Ootpa)
system-release-cpe: cpe:/o:redhat:enterprise_linux:8.1:ga

uname -a:
Linux localhost.localdomain 4.18.0-147.el8.x86_64 #1 SMP Thu Sep 26 15:52:44 UTC 2019
x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:
CVE-2018-3620 (L1 Terminal Fault): Not affected
Microarchitectural Data Sampling: Not affected
CVE-2017-5754 (Meltdown): Not affected
CVE-2018-3639 (Speculative Store Bypass): Mitigation: Speculative Store Bypass disabled via prctl and seccomp
CVE-2017-5753 (Spectre variant 1): Mitigation: usercopy/swapgs barriers and __user pointer sanitization
CVE-2017-5715 (Spectre variant 2): Mitigation: Enhanced IBRS, IBPB: conditional, RSB filling

run-level 3 Sep 21 10:07

SPEC is set to: /home/CPU2017
Filesystem Type Size Used Avail Use% Mounted on
/dev/mapper/rhel-home xfs 839G 129G 711G 16% /home

From /sys/devices/virtual/dmi/id
BIOS: Inspur 4.1.09 09/23/2019
Vendor: Inspur
Product: NF8480M5
Product Family: Type1Family
Serial: 219598462

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.
Memory:
24x NO DIMM NO DIMM
24x Samsung M393A4K40CB2-CVF 32 GB 2 rank 2933

(End of data from sysinfo program)
Insipur Corporation

Inspur NF8480M5 (Intel Xeon Platinum 8280M)

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---

CPU2017 License: 3358

Test Sponsor: Inspur Corporation

Tested by: Inspur Corporation

Hardware Availability: Feb-2020

Software Availability: Apr-2020

---

**Compiler Version Notes**

```plaintext
==============================================================================
C       | 600.perlbench_s(base) 602.gcc_s(base, peak) 605.mcf_s(base, peak) 625.x264_s(base, peak) 657.xz_s(base, peak)
==============================================================================
Intel(R) C Compiler for applications running on Intel(R) 64, Version 2021.1
NextGen Build 20200304
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

------------------------------------------------------------------------------
C       | 600.perlbench_s(peak)
------------------------------------------------------------------------------
Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.1.1.217 Build 20200306
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

------------------------------------------------------------------------------
C       | 600.perlbench_s(base) 602.gcc_s(base, peak) 605.mcf_s(base, peak) 625.x264_s(base, peak) 657.xz_s(base, peak)
------------------------------------------------------------------------------
Intel(R) C Compiler for applications running on Intel(R) 64, Version 2021.1
NextGen Build 20200304
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

------------------------------------------------------------------------------
C       | 600.perlbench_s(peak)
------------------------------------------------------------------------------
Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.1.1.217 Build 20200306
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

------------------------------------------------------------------------------
C++     | 620.omnetpp_s(base, peak) 623.xalancbmk_s(base, peak) 631.deepsjeng_s(base, peak) 641.leela_s(base, peak)
------------------------------------------------------------------------------
Intel(R) C++ Compiler for applications running on Intel(R) 64, Version 2021.1
NextGen Build 20200304
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

------------------------------------------------------------------------------
Fortran | 648.exchange2_s(base, peak)
------------------------------------------------------------------------------
Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)
```

(Continued on next page)
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**Compiler Version Notes (Continued)**

64, Version 19.1.1.217 Build 20200306
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**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:
- -m64 -qnextgen -std=c11
- -W1, -plugin-opt=-x86-branches-within-32B-boundaries -Wl,-z,muldefs
- -xCORE-AVX512 -O3 -ffast-math -flto -mfpmath=sse -funroll-loops
- -fuse-ld=gold -qopt-mem-layout-trans=4 -fopenmp -DSPEC_OPENMP
- -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

C++ benchmarks:
- -m64 -qnextgen -W1, -plugin-opt=-x86-branches-within-32B-boundaries
- -W1, -z,muldefs -xCORE-AVX512 -O3 -ffast-math -flto -mfpmath=sse
- -funroll-loops -fuse-ld=gold -qopt-mem-layout-trans=4

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**SPEC CPU®2017 Integer Speed Result**

**Inspar Corporation**

**Inspar NF8480M5 (Intel Xeon Platinum 8280M)**

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| SPECspeed®2017_int_peak = 11.9 |

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**Base Optimization Flags (Continued)**

C++ benchmarks (continued):
- `-L/usr/local/IntelCompiler19/compilers_and_libraries_2020.1.217/linux/compiler/lib/intel64_lin`
- `-lqkmalloc`

Fortran benchmarks:
- `-m64`
- `-Wl,-plugin-opt=-x86-branches-within-32B-boundaries`
- `-xCORE-AVX512`
- `-O3`
- `-ipo`
- `-no-prec-div`
- `-qopt-mem-layout-trans=4`
- `-nostandard-realloc-lhs`
- `-align array32byte`
- `-mbranches-within-32B-boundaries`

---

**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(*) –DSPEC_LP64`
605.mcf_s: `–DSPEC_LP64`
620.ommntpp_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`

(*) Indicates a portability flag that was found in a non-portability variable.

---

**Peak Optimization Flags**

C benchmarks:

(Continued on next page)
Inspur Corporation

Inspur NF8480M5 (Intel Xeon Platinum 8280M)

SPECspeed®2017_int_base = 11.6
SPECspeed®2017_int_peak = 11.9

CPU2017 License: 3358
Test Sponsor: Inspur Corporation
Tested by: Inspur Corporation

Test Date: Sep-2020
Hardware Availability: Feb-2020
Software Availability: Apr-2020

Peak Optimization Flags (Continued)

600.perlbench_s: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2)
-xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4 -fno-strict-overflow
-mbranches-within-32B-boundaries
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

602.gcc_s: -m64 -qnextgen -std=c11 -fuse-ld=gold
-Wl,-plugin-opt=-x86-branches-within-32B-boundaries
-Wl,-z,muldefs -fprofile-generate(pass 1)
-fprofile-use=default.profdata(pass 2) -xCORE-AVX512 -flto
-Ofast(pass 1) -O3 -ffast-math -qopt-mem-layout-trans=4
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

605.mcf_s: basepeak = yes

625.x264_s: -m64 -qnextgen -std=c11
-Wl,-plugin-opt=-x86-branches-within-32B-boundaries
-Wl,-z,muldefs -xCORE-AVX512 -flto -O3 -ffast-math
-fuse-ld=gold -qopt-mem-layout-trans=4 -fno-alias
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

657.xz_s: basepeak = yes

C++ benchmarks:

620.omnetpp_s: basepeak = yes

623.xalancbmk_s: basepeak = yes

631.deepsjeng_s: basepeak = yes

641.leela_s: basepeak = yes

Fortran benchmarks:

648.exchange2_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-ic19.1u1-official-linux64_revA.xml
http://www.spec.org/cpu2017/flags/Inspur-Platform-Settings-V1.9.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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