Lenovo Global Technology
ThinkSystem SR570
(1.90 GHz, Intel Xeon Bronze 3206R)

SPECrated®2017_int_base = 60.0
SPECrated®2017_int_peak = Not Run

CPU2017 License: 9017
Test Sponsor: Lenovo Global Technology
Tested by: Lenovo Global Technology

Hardware
CPU Name: Intel Xeon Bronze 3206R
Max MHz: 1900
Nominal: 1900
Enabled: 16 cores, 2 chips
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: 11 MB I+D on chip per chip
Other: None
Memory: 384 GB (12 x 32 GB 2Rx4 PC4-2933Y-R, running at 2133)
Storage: 1 x 960 GB SATA SSD
Other: None

Software
OS: SUSE Linux Enterprise Server 15 SP1 (x86_64)
Kernel 4.12.14-195-default
Compiler: C/C++: Version 19.1.1.217 of Intel C/C++
Compiler for Linux;
Fortran: Version 19.1.1.217 of Intel Fortran
Compiler for Linux
Parallel: No
Firmware: Lenovo BIOS Version TEE155L 2.61 released May-2020
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: Not Applicable
Other: None
Power Management: BIOS set to prefer performance at the cost of additional power usage
# SPEC CPU®2017 Integer Rate Result

## Lenovo Global Technology

ThinkSystem SR570  
(1.90 GHz, Intel Xeon Bronze 3206R)

<table>
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### Results Table

<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>
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</thead>
<tbody>
<tr>
<td>500.perlbench_r</td>
<td>16</td>
<td>588</td>
<td><strong>43.3</strong></td>
<td>589</td>
<td><strong>43.2</strong></td>
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<td><strong>43.3</strong></td>
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<tr>
<td>502.gcc_r</td>
<td>16</td>
<td>412</td>
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<td>505.mcf_r</td>
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</tr>
<tr>
<td>520.omnetpp_r</td>
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<tr>
<td>523.xalancbmk_r</td>
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</tr>
<tr>
<td>531.deepsjeng_r</td>
<td>16</td>
<td>406</td>
<td>45.1</td>
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<td>541.leela_r</td>
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<td>733</td>
<td>36.2</td>
<td><strong>733</strong></td>
<td><strong>36.2</strong></td>
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<td></td>
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</tr>
<tr>
<td>548.exchange2_r</td>
<td>16</td>
<td>361</td>
<td>116</td>
<td>364</td>
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<td><strong>364</strong></td>
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</tr>
<tr>
<td>557.xz_r</td>
<td>16</td>
<td>552</td>
<td>31.3</td>
<td>551</td>
<td>31.3</td>
<td><strong>552</strong></td>
<td><strong>31.3</strong></td>
<td></td>
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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"

### Environment Variables Notes

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

```
LD_LIBRARY_PATH = 
    "/home/cpu2017-1.1.0-ic19.1.1/lib/intel64:/home/cpu2017-1.1.0-ic19.1.1/l 
    ib/ia32:/home/cpu2017-1.1.0-ic19.1.1/je5.0.1-32"
MALLOCP_CONF = "retain:true"
```
**SPEC CPU®2017 Integer Rate Result**

**Lenovo Global Technology**

**ThinkSystem SR570**  
(1.90 GHz, Intel Xeon Bronze 3206R)

<table>
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<tr>
<th>CPU2017 License:</th>
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<th>Test Date:</th>
<th>Jun-2020</th>
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<tr>
<td>Test Sponsor:</td>
<td>Lenovo Global Technology</td>
<td>Hardware Availability:</td>
<td>Mar-2020</td>
</tr>
<tr>
<td>Tested by:</td>
<td>Lenovo Global Technology</td>
<td>Software Availability:</td>
<td>Apr-2020</td>
</tr>
</tbody>
</table>

**SPECRate®2017_int_base = 60.0**

**SPECRate®2017_int_peak = Not Run**

---

**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:
  ```bash
  sync; echo 3> /proc/sys/vm/drop_caches
  ```
- runcpu command invoked through numactl i.e.:
  ```bash
  numactl --interleave=all runcpu <etc>
  ```

**Platform Notes**

- BIOS configuration:
  - Choose Operating Mode set to Maximum Performance and then set it to Custom Mode
  - MONITOR/MWAIT set to Enable
  - Trusted Execution Technology set to Enable
  - Patrol Scrub set to Disable

- Sysinfo program /home/cpu2017-1.1.0-ic19.1.1/bin/sysinfo
  - Rev: r6365 of 2019-08-21 295195f888a3d7edb1e6e46a485a0011
  - running on linux-rn74 Thu Jun 11 11:33:05 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](https://www.spec.org/cpu2017/Docs/config.html#sysinfo)

- From /proc/cpuinfo
  ```
  model name : Intel(R) Xeon(R) Bronze 3206R CPU @ 1.90GHz
  2 "physical id"s (chips)
  16 "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 : 8
  siblings : 8
  physical 0: cores 0 1 2 3 4 5 6 7
  physical 1: cores 0 1 2 3 4 5 6 7
  ```

- From lscpu:
  ```
  Architecture: x86_64
  CPU op-mode(s): 32-bit, 64-bit
  Byte Order: Little Endian
  ```

---

(Continued on next page)
Lenovo Global Technology

ThinkSystem SR570
(1.90 GHz, Intel Xeon Bronze 3206R)

SPECrater®2017_int_base = 60.0
SPECrater®2017_int_peak = Not Run

CPU2017 License: 9017
Test Sponsor: Lenovo Global Technology
Tested by: Lenovo Global Technology

Address sizes: 46 bits physical, 48 bits virtual
CPU(s): 16
On-line CPU(s) list: 0-15
Thread(s) per core: 1
Core(s) per socket: 8
Socket(s): 2
NUMA node(s): 2
Vendor ID: GenuineIntel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Bronze 3206R CPU @ 1.90GHz
Stepping: 7
CPU MHz: 1900.000
CPU max MHz: 1900.0000
CPU min MHz: 1000.0000
BogoMIPS: 3800.00
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 11264K
NUMA node0 CPU(s): 0-7
NUMA node1 CPU(s): 8-15
Flags: fpu vme de pse tsc msr pae mca cmov 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 cpuid
aperfmpref pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 fma cx16
xptr 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_l3
invpcid_single intel_pmm ssbd mba ibrs ibpb stibp ibrs_enhanced tpr_shadow vnmi
flexpriority vpti 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 xsaveopt xsaves cqm_llc cqm_occmap_llc cqm_mbb_total
cqm_mbb_local dtherm arat pln pts pku ospke avx512_vnni md_clear flush_lld
arch_capabilities

/proc/cpuinfo cache data

cache size : 11264 KB

From numactl --hardware WARNING: a numactl 'node' might or might not correspond to a
physical chip.
available: 2 nodes (0-1)
node 0 cpus: 0 1 2 3 4 5 6 7
node 0 size: 192829 MB
node 0 free: 192371 MB
node 1 cpus: 8 9 10 11 12 13 14 15
node 1 size: 193533 MB

(Continued on next page)
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Test Date: Jun-2020
Tested by: Lenovo Global Technology
Hardware Availability: Mar-2020
Software Availability: Apr-2020

Platform Notes (Continued)

Product Family: ThinkSystem
Serial: 1234567890

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:
4x NO DIMM NO DIMM
12x Samsung M393A4K40CB2-CVF 32 GB 2 rank 2933

(End of data from sysinfo program)
This system support 8 DIMMs per processor, total 16 DIMMs.
12 DIMM slots installed with 32 GB DIMM for this run, and running at 2133 due to CPU limitation.

Compiler Version Notes

C
| 500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base) 525.x264_r(base) 557.xz_r(base)

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++
| 520.omnetpp_r(base) 523.xalancbmk_r(base) 531.deepsjeng_r(base) 541.leela_r(base)

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
| 548.exchange2_r(base)

Intel(R) Fortran 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.
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## Base Compiler Invocation

**C benchmarks:**  
`icc`

**C++ benchmarks:**  
`icpc`

**Fortran benchmarks:**  
`ifort`

---

## 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:**  
`-m64 -qnextgen -std=c11`  
`-Wl,-plugin-opt=-x86-branches-within-32B-boundaries -Wl,-z,muldefs`  
`-xCORE-AVX512 -O3 -ffast-math -ftlo -mfpmath=sse -funroll-loops`  
`-fuse-ld=gold -qopt-mem-layout-trans=4`  
`-L/usr/local/IntelCompiler19/compilers_and_libraries_2020.1.217/linux/compiler/lib/intel64_lin`  
`-lqkmalloc`

**C++ benchmarks:**  
`-m64 -qnextgen -Wl,-plugin-opt=-x86-branches-within-32B-boundaries`  
`-Wl,-z,muldefs -xCORE-AVX512 -O3 -ffast-math -ftlo -mfpmath=sse`  
`-funroll-loops -fuse-ld=gold -qopt-mem-layout-trans=4`  
`-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 -Wl,-z,muldefs`  
`-xCORE-AVX512 -O3 -ipo -no-prec-div -qopt-mem-layout-trans=4`

(Continued on next page)
Lenovo Global Technology
ThinkSystem SR570
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SPECrate®2017_int_base = 60.0
SPECrate®2017_int_peak = Not Run

Base Optimization Flags (Continued)

Fortran benchmarks (continued):
-nostandard-realloc-lhs -align array32byte -auto
-mbranches-within-32B-boundaries
-L/usr/local/IntelCompiler19/compilers_and_libraries_2020.1.217/linux/compiler/lib/intel64_lin
-lqkmalloc

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2017/flags/Lenovo-Platform-SPECcpu2017-Flags-V1.2-CLX-I.html

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/Lenovo-Platform-SPECcpu2017-Flags-V1.2-CLX-I.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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