**SPEC® CPU2017 Integer Speed Result**

**Supermicro**
SuperServer 2049U-TR4  
(X11QPH+, Intel Xeon Gold 6244)

<table>
<thead>
<tr>
<th>SPECspeed2017_int_base</th>
<th>= 11.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECspeed2017_int_peak</td>
<td>= Not Run</td>
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</tbody>
</table>

**CPU2017 License:** 001176  
**Test Sponsor:** Supermicro  
** Tested by:** Supermicro  
** Test Date:** Feb-2019  
**Hardware Availability:** Apr-2019  
**Software Availability:** Mar-2019

### Threads

<table>
<thead>
<tr>
<th>Test</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>0</td>
<td>7.61</td>
</tr>
<tr>
<td>1</td>
<td>10.7</td>
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<tr>
<td>2</td>
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<tr>
<td>16</td>
<td>13.8</td>
</tr>
<tr>
<td>32</td>
<td>15.1</td>
</tr>
<tr>
<td>64</td>
<td>5.93</td>
</tr>
<tr>
<td>64</td>
<td>5.30</td>
</tr>
<tr>
<td>64</td>
<td>15.9</td>
</tr>
<tr>
<td>64</td>
<td>26.2</td>
</tr>
</tbody>
</table>

---

### Hardware

**CPU Name:** Intel Xeon Gold 6244  
**Max MHz.:** 4400  
**Nominal:** 3600  
**Enabled:** 32 cores, 4 chips, 2 threads/core  
**Orderable:** 1,2,4 chips  
**Cache L1:** 32 KB I + 32 KB D on chip per core  
**L2:** 1 MB I+D on chip per core  
**L3:** 24.75 MB I+D on chip per chip  
**Other:** None  
**Memory:** 768 GB (48 x 16 GB 2Rx8 PC4-2933Y-R)  
**Storage:** 1 x 1.92 TB SATA SSD  
**Other:** None

### Software

**OS:** Red Hat Enterprise Linux Server release 7.6 (Maipo)  
**Compiler:** C/C++: Version 19.0.1.144 of Intel C/C++ Compiler Build 20181018 for Linux; Fortran: Version 19.0.1.144 of Intel Fortran Compiler Build 20181018 for Linux  
**Parallel:** Yes  
**Firmware:** Version 3.0a released Feb-2019 tested as Jan-2019  
**File System:** xfs  
**System State:** Run level 3 (multi-user)  
**Base Pointers:** 64-bit  
**Peak Pointers:** Not Applicable  
**Other:** jemalloc memory allocator V5.0.1
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(X11QPH+, Intel Xeon Gold 6244)

---

**SPECspeed2017_int_base = 11.0**

**SPECspeed2017_int_peak = Not Run**

---

### Results Table

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<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>
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<tr>
<td>620.omnetpp_s</td>
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<td>623.xalancbmk_s</td>
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<td>117</td>
<td>15.1</td>
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<tr>
<td>631.deepsjeng_s</td>
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<td>5.89</td>
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<td>5.93</td>
<td>242</td>
<td>5.93</td>
</tr>
<tr>
<td>641.leela_s</td>
<td>64</td>
<td>322</td>
<td>5.31</td>
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<td>5.30</td>
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<td>5.30</td>
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<tr>
<td>648.exchange2_s</td>
<td>64</td>
<td>185</td>
<td>15.9</td>
<td>185</td>
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<td>185</td>
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<tr>
<td>657.xz_s</td>
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<td>239</td>
<td>25.8</td>
<td>236</td>
<td>26.2</td>
<td>235</td>
<td>26.3</td>
</tr>
</tbody>
</table>

**SPECspeed2017_int_base = 11.0**

**SPECspeed2017_int_peak = Not Run**

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/lib/ia32:/home/cpu2017/lib/intel64:/home/cpu2017/je5.0.1-32:/home/cpu2017/je5.0.1-64"
- OMP_STACKSIZE = "192M"

Binaries compiled on a system with 1x Intel Core i9-7900X 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) is mitigated in the system as tested and documented.

SPEC CPU2017 Integer Speed Result

Supermicro
SuperServer 2049U-TR4
(X11QPH+, Intel Xeon Gold 6244)

SPECspeed2017_int_base = 11.0
SPECspeed2017_int_peak = Not Run

CPU2017 License: 001176
Test Sponsor: Supermicro
Tested by: Supermicro

Platform Notes

BIOS Settings:
Intel Virtualization Technology = Disable
SNC = Disable
Stale AtoS = Enable
LLC Dead Line Alloc = Disable
IMC Interleaving = 1-way Interleave
Patrol Scrub = Disable
Power Performance Tuning = BIOS Controls EPB
Energy Performance BIAS Setting = Max Performance
Enhanced Halt State (C1E) = Disable

Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9
running on 116-252.pnet Fri Feb 22 11:44:44 2019

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 6244 CPU @ 3.60GHz
  4 "physical id"s (chips)
  64 "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 : 16
  physical 0: cores 2 8 9 18 19 20 25 27
  physical 1: cores 4 8 17 18 19 24 25 27
  physical 2: cores 1 3 4 9 17 18 25 27
  physical 3: cores 2 4 17 18 19 24 25 27

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 64
On-line CPU(s) list: 0-63
Thread(s) per core: 2
Core(s) per socket: 8
Socket(s): 4
NUMA node(s): 4
Vendor ID: GenuineIntel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Gold 6244 CPU @ 3.60GHz
Stepping: 6
### SPEC CPU2017 Integer Speed Result

<table>
<thead>
<tr>
<th>Platform Notes (Continued)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU MHZ: 3601.000</td>
</tr>
<tr>
<td>CPU max MHZ: 3601.000000</td>
</tr>
<tr>
<td>CPU min MHZ: 1200.0000</td>
</tr>
<tr>
<td>BogoMIPS: 7200.00</td>
</tr>
<tr>
<td>Virtualization: VT-x</td>
</tr>
<tr>
<td>L1d cache: 32K</td>
</tr>
<tr>
<td>L1i cache: 32K</td>
</tr>
<tr>
<td>L2 cache: 1024K</td>
</tr>
<tr>
<td>L3 cache: 25344K</td>
</tr>
<tr>
<td>NUMA node0 CPU(s): 0-7,32-39</td>
</tr>
<tr>
<td>NUMA node1 CPU(s): 8-15,40-47</td>
</tr>
<tr>
<td>NUMA node2 CPU(s): 16-23,48-55</td>
</tr>
<tr>
<td>NUMA node3 CPU(s): 24-31,56-63</td>
</tr>
</tbody>
</table>

Flags: fpu vme de pse tsc msr pae 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 aperfmprefp eagerfpu 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 epb cat_l3 cdp_l3 intel_pt ssbd mbm ibrs ibp stibp ibrs_enhanced tpr_shadow vmmi 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 avx512cd avx512bw avx512vl xsaveopt xsavec xsetbv1 cqcm_llc cqcm_occup_l1c cqcm будет total cqcm_mbb_local dtherm ida arat pln pts pku ospke avx512_vnnl spec_ctrl intel_stibp flush_l1d arch_capabilities

/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 6 7 32 33 34 35 36 37 38 39
  node 0 size: 196192 MB
  node 0 free: 191554 MB
  node 1 cpus: 8 9 10 11 12 13 14 15 40 41 42 43 44 45 46 47
  node 1 size: 196608 MB
  node 1 free: 192108 MB
  node 2 cpus: 16 17 18 19 20 21 22 23 48 49 50 51 52 53 54 55
  node 2 size: 196608 MB
  node 2 free: 192063 MB
  node 3 cpus: 24 25 26 27 28 29 30 31 56 57 58 59 60 61 62 63
  node 3 size: 196608 MB
  node 3 free: 192140 MB
  node distances:
    node 0 1 2 3
    0: 10 21 21 21
    1: 21 10 21 21

(Continued on next page)
SPEC CPU2017 Integer Speed Result

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Tested by: Supermicro

Test Date: Feb-2019
Hardware Availability: Apr-2019
Software Availability: Mar-2019

Platform Notes (Continued)

2: 21 21 10 21
3: 21 21 21 10

From /proc/meminfo
MemTotal: 792150056 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

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

os-release:
NAME="Red Hat Enterprise Linux Server"
VERSION="7.6 (Maipo)"
ID="rhel"
ID_LIKE="fedora"
VARIANT="Server"
VARIANT_ID="server"
VERSION_ID="7.6"
PRETTY_NAME="Red Hat Enterprise Linux Server 7.6 (Maipo)"
redhat-release: Red Hat Enterprise Linux Server release 7.6 (Maipo)
system-release: Red Hat Enterprise Linux Server release 7.6 (Maipo)

uname -a:
Linux 116-252.pnet 3.10.0-957.el7.x86_64 #1 SMP Thu Oct 4 20:48:51 UTC 2018 x86_64
x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:
CVE-2017-5754 (Meltdown): Not affected
CVE-2017-5753 (Spectre variant 1): Mitigation: Load fences, __user pointer sanitization
CVE-2017-5715 (Spectre variant 2): Mitigation: Enhanced IBRS

run-level 3 Feb 22 11:40

SPEC is set to: /home/cpu2017

Filesystem Type Size Used Avail Use% Mounted on
/dev/sda5 xfs 1.7T 251G 1.5T 15% /home

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. 3.0a 01/23/2019
Memory:
48x Hynix HMA82GR7CJR8N-WM 16 GB 2 rank 2933, configured at 2934

(End of data from sysinfo program)
Supermicro
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Compiler Version Notes

==============================================================================
<table>
<thead>
<tr>
<th>CC</th>
<th>600.perlbench_s(base) 602.gcc_s(base) 605.mcf_s(base) 625.x264_s(base)</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>657.xz_s(base)</td>
</tr>
<tr>
<td>-----</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Version 19.0.1.144 Build 20181018</td>
</tr>
<tr>
<td></td>
<td>Copyright (C) 1985-2018 Intel Corporation. All rights reserved.</td>
</tr>
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==============================================================================
<p>| CXXC| 620.omnetpp_s(base) 623.xalancbmk_s(base) 631.deepsjeng_s(base)       |</p>
<table>
<thead>
<tr>
<th></th>
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<tr>
<td>Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64,</td>
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==============================================================================
<table>
<thead>
<tr>
<th>FC</th>
<th>648.exchange2_s(base)</th>
</tr>
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<tbody>
<tr>
<td>Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R) 64,</td>
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<td>Version 19.0.1.144 Build 20181018</td>
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<tr>
<td>-----</td>
<td>------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>

Base Compiler Invocation

C benchmarks:
icc -m64 -std=c11

C++ benchmarks:
icpc -m64

Fortran benchmarks:
ifort -m64

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

(Continued on next page)
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---

**SPECspeed2017_int_base** = 11.0

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**CPU2017 License:** 001176  
**Test Sponsor:** Supermicro  
**Tested by:** Supermicro

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**Base Portability Flags (Continued)**

- 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:**
- -Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div
- -qopt-mem-layout-trans=4 -qopenmp -DSPEC_OPENMP
- -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=4
- -L/usr/local/IntelCompiler19/compilers_and_libraries_2019.1.144/linux/compiler/lib/intel64
- -lqkmalloc

**Fortran benchmarks:**
- -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-mem-layout-trans=4
- -nostandard-realloc-lhs

---

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/Supermicro-Platform-Settings-V1.2-CLX-revA.xml](http://www.spec.org/cpu2017/flags/Supermicro-Platform-Settings-V1.2-CLX-revA.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 2019-02-22 14:44:44.0500.  
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