Supermicro
SuperWorkstation 5039A-i (X11SRA, Intel Xeon W-2133)

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<tr>
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<td>42.5</td>
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CPU2017 License: 001176
Test Sponsor: Supermicro
Tested by: Supermicro

Hardware
CPU Name: Intel Xeon W-2133
Max MHz.: 3900
Nominal: 3600
Enabled: 6 cores, 1 chip, 2 threads/core
Orderable: 1 chip
Cache L1: 32 KB I + 32 KB D on chip per core
L2: 1 MB I+D on chip per core
L3: 8.25 MB I+D on chip per chip
Other: None
Memory: 64 GB (4 x 16 GB 2Rx8 PC4-2666V-E)
Storage: 1 x 200 GB SATA III SSD
Other: None

Software
OS: SUSE Linux Enterprise Server 12 SP3 (x86_64)
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: None
Parallel: No
Firmware: Supermicro BIOS version 1.2 released Aug-2018
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 32/64-bit
Other: jemalloc memory allocator library V5.0.1
SPEC CPU2017 Integer Rate Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

Results Table

<table>
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<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
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<th>Ratio</th>
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<td>598</td>
<td>32.0</td>
<td>596</td>
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<td>594</td>
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<td>515</td>
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<td>32.9</td>
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<tr>
<td>505.mcf_r</td>
<td>12</td>
<td>384</td>
<td>50.4</td>
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<td>520.omnetpp_r</td>
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<td>645</td>
<td>24.4</td>
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<tr>
<td>523.xalancbmk_r</td>
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<td>525.x264_r</td>
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<td>81.6</td>
<td>256</td>
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<td>531.deepsjeng_r</td>
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</tr>
<tr>
<td>541.leela_r</td>
<td>12</td>
<td>596</td>
<td>33.4</td>
<td>583</td>
<td>34.1</td>
<td>579</td>
<td>34.3</td>
</tr>
<tr>
<td>548.exchange2_r</td>
<td>12</td>
<td>390</td>
<td>80.6</td>
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<td>80.6</td>
<td>390</td>
<td>80.7</td>
</tr>
<tr>
<td>557.xz_r</td>
<td>12</td>
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<td>502</td>
<td>25.8</td>
<td>501</td>
<td>25.9</td>
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SPECrate2017_int_base = 40.2
SPECrate2017_int_peak = 42.5

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

Submit Notes

The taskset mechanism was used to bind copies to processors. The config file option 'submit' was used to generate taskset 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

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.
General Notes (Continued)

jemalloc, a general purpose malloc implementation
built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5

Platform Notes

Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f6f4985e45859ea9
running on linux-k7zv Tue Sep 18 16:03:57 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) W-2133 CPU @ 3.60GHz
  1 "physical id"s (chips)
  12 "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 : 6
siblings : 12
physical 0: cores 0 1 2 3 4 5

From lscpu:
Architecture:      x86_64
CPU op-mode(s):    32-bit, 64-bit
Byte Order:        Little Endian
CPU(s):            12
On-line CPU(s) list: 0-11
Thread(s) per core: 2
Core(s) per socket: 6
Socket(s):         1
NUMA node(s):      1
Vendor ID:         GenuineIntel
CPU family:        6
Model:             85
Model name:        Intel(R) Xeon(R) W-2133 CPU @ 3.60GHz
Stepping:          4
CPU MHz:           1200.000
CPU max MHz:       3601.0000
CPU min MHz:       1200.0000
BogoMIPS:          7199.86
Virtualization:    VT-x
L1d cache:         32K
L1i cache:         32K

(Continued on next page)
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**CPU2017 License:** 001176  
**Test Sponsor:** Supermicro  
**Tested by:** Supermicro  
**Test Date:** Sep-2018  
**Hardware Availability:** Jul-2017  
**Software Availability:** Mar-2018

**Platform Notes (Continued)**

| L2 cache: | 1024K |
| L3 cache: | 8448K |
| NUMA node0 CPU(s): | 0-11 |
| 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 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 ida arat epb invpcid_single l1d pls dtherm intel_pt rsb_ctxtsw spec_ctrl retpoline kaiser tpr_shadow vnmi flexpriority ept vpid fsgsbase tsc_adjust bm1 hle avx2 smep bmi2 erms invpcid rtm cqm mpx avx512f avx512dq rdseed adx smap clflushopt clwb avx512cd avx512bw avx512vl xsaveopt xsavec xgetbv1 cqm_llc cqm_occup_llc |
| /proc/cpuinfo cache data | cache size: 8448 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 2 3 4 5 6 7 8 9 10 11 |
| node 0 size: | 64119 MB |
| node 0 free: | 63348 MB |
| node distances: | |
| node 0 | 0: 10 |
| From /proc/meminfo | MemTotal: 65658344 KB |
| HugePages_Total: | 0 |
| Hugepagesize: | 2048 KB |
| From /etc/*release* /etc/*version* | SuSE-release: |
| NAME="SLES" | VERSION="12-SP3" |
| VERSION_ID="12.3" | PRETTY_NAME="SUSE Linux Enterprise Server 12 SP3" |
| ID="sles" | ANSI_COLOR="0;32" |
| CPE_NAME="cpe:/o:suse:sles:12:sp3" |

(Continued on next page)
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Software Availability: Mar-2018

Platform Notes (Continued)

uname -a:
    Linux linux-k7zv 4.4.114-94.11-default #1 SMP Thu Feb 1 19:28:26 UTC 2018 (4309ff9)
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: Barriers
CVE-2017-5715 (Spectre variant 2): Mitigation: IBRS+IBPB

run-level 3 Sep 18 15:57

SPEC is set to: /home/cpu2017

Filesystem     Type  Size  Used Avail Use% Mounted on
/dev/sda4      xfs   145G   17G  128G  12% /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. 1.2 08/23/2018
   Memory:
       4x Micron 18ADF2G72AZ-2G6H1R 16 GB 2 rank 2666
       4x NO DIMM NO DIMM

(End of data from sysinfo program)

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)
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**Compiler Version Notes (Continued)**

```plaintext
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.
```

```plaintext
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.
```

```plaintext
FC 548.exchange2_r(base)

ifort (IFORT) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
```

```plaintext
FC 548.exchange2_r(peak)

ifort (IFORT) 18.0.2 20180210
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
```

---

**Base Compiler Invocation**

**C benchmarks:**

```bash
icc -m64 -std=c11
```

**C++ benchmarks:**

```bash
icpc -m64
```

**Fortran benchmarks:**

```bash
ifort -m64
```
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Test Date: Sep-2018  
Hardware Availability: Jul-2017  
Software Availability: Mar-2018

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:  
-Wl,-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:  
-Wl,-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:  
-Wl,-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

Peak Compiler Invocation

C benchmarks (except as noted below):  
icc -m64 -std=c11

502.gcc_r.icc -m32 -std=c11 -L/home/prasad/specdev/IC18u2_Internal/lin_18_0_20180210/compiler/lib/ia32_lin

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

523.xalancbmk_r.icc -m32 -L/home/prasad/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
- 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: basepeak = yes

Fortran benchmarks:

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### Peak Optimization Flags (Continued)

548.exchange2_r: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: