**Supermicro**

SuperStorage 6029P-E1CR24H (X11DSC+, Intel Xeon Silver 4215R)

**SPEC CPU®2017 Integer Speed Result**

<table>
<thead>
<tr>
<th>Software Availability:</th>
<th>Feb-2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU2017 License:</td>
<td>001176</td>
</tr>
<tr>
<td>Test Sponsor:</td>
<td>Supermicro</td>
</tr>
<tr>
<td>Tested by:</td>
<td>Supermicro</td>
</tr>
<tr>
<td>Test Date:</td>
<td>Sep-2020</td>
</tr>
<tr>
<td>Hardware Availability:</td>
<td>Apr-2020</td>
</tr>
</tbody>
</table>

### SPECspeed®2017_int_base = 10.1

### SPECspeed®2017_int_peak = 10.4

<table>
<thead>
<tr>
<th>Software</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>OS:</td>
<td>Red Hat Enterprise Linux release 8.1</td>
</tr>
<tr>
<td>Parallel:</td>
<td>Yes</td>
</tr>
<tr>
<td>Firmware:</td>
<td>Version 3.2 released Oct-2019</td>
</tr>
<tr>
<td>File System:</td>
<td>xfs</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>64-bit</td>
</tr>
<tr>
<td>Other:</td>
<td>jemalloc memory allocator V5.0.1</td>
</tr>
<tr>
<td>Power Management:</td>
<td>BIOS set to prefer performance at the cost of additional power usage</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hardware</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name:</td>
<td>Intel Xeon Silver 4215R</td>
</tr>
<tr>
<td>Max MHz:</td>
<td>4000</td>
</tr>
<tr>
<td>Nominal:</td>
<td>3200</td>
</tr>
<tr>
<td>Enabled:</td>
<td>16 cores, 2 chips</td>
</tr>
<tr>
<td>Orderable:</td>
<td>1.2 chips</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>1 MB I+D on chip per core</td>
</tr>
<tr>
<td>L3:</td>
<td>11 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Other:</td>
<td>None</td>
</tr>
<tr>
<td>Memory:</td>
<td>384 GB (12 x 32 GB 2Rx4 PC4-2933Y-R)</td>
</tr>
<tr>
<td>Storage:</td>
<td>1 x 200 GB SATA III SSD</td>
</tr>
<tr>
<td>Other:</td>
<td>None</td>
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</tbody>
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---

### SPECspeed Performance Results

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>SPECspeed®2017_int_base</th>
<th>SPECspeed®2017_int_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>perlbench_s</td>
<td>16 threads</td>
<td>6.43</td>
</tr>
<tr>
<td>gcc_s</td>
<td>16 threads</td>
<td>8.91</td>
</tr>
<tr>
<td>mcf_s</td>
<td>16 threads</td>
<td>6.02</td>
</tr>
<tr>
<td>omnetpp_s</td>
<td>16 threads</td>
<td>13.6</td>
</tr>
<tr>
<td>xalancbmk_s</td>
<td>16 threads</td>
<td>5.82</td>
</tr>
<tr>
<td>x264_s</td>
<td>16 threads</td>
<td>15.7</td>
</tr>
<tr>
<td>deepsjeng_s</td>
<td>16 threads</td>
<td>4.91</td>
</tr>
<tr>
<td>leela_s</td>
<td>16 threads</td>
<td>16.9</td>
</tr>
<tr>
<td>exchange2_s</td>
<td>16 threads</td>
<td>19.0</td>
</tr>
<tr>
<td>txz_s</td>
<td>16 threads</td>
<td>19.0</td>
</tr>
</tbody>
</table>
Supermicro
SuperStorage 6029P-E1CR24H
(X11DSC+, Intel Xeon Silver 4215R)

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

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Base</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Peak</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
<td>16</td>
<td>276</td>
<td>6.43</td>
<td>276</td>
<td>6.44</td>
<td>279</td>
<td>6.35</td>
<td>245</td>
<td>7.24</td>
<td>244</td>
<td>7.26</td>
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<tr>
<td>602.gcc_s</td>
<td>16</td>
<td>447</td>
<td>8.91</td>
<td>447</td>
<td>8.91</td>
<td>447</td>
<td>8.92</td>
<td>423</td>
<td>9.41</td>
<td>420</td>
<td>9.49</td>
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<tr>
<td>605.mcf_s</td>
<td>16</td>
<td>266</td>
<td>17.7</td>
<td>268</td>
<td>17.6</td>
<td>266</td>
<td>17.8</td>
<td>266</td>
<td>17.7</td>
<td>266</td>
<td>17.8</td>
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<td>620.omnetpp_s</td>
<td>16</td>
<td>267</td>
<td>6.10</td>
<td>275</td>
<td>5.93</td>
<td>271</td>
<td>6.02</td>
<td>271</td>
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<td>6.02</td>
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<tr>
<td>623.xalanchmk_s</td>
<td>16</td>
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<td>13.6</td>
<td>105</td>
<td>13.6</td>
<td>104</td>
<td>13.7</td>
<td>104</td>
<td>13.7</td>
<td>104</td>
<td>13.7</td>
</tr>
<tr>
<td>625.x264_s</td>
<td>16</td>
<td>116</td>
<td>15.2</td>
<td>116</td>
<td>15.2</td>
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<td>15.2</td>
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<td>15.7</td>
<td>112</td>
<td>15.7</td>
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<td>631.deepsjeng_s</td>
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<td>246</td>
<td>5.82</td>
<td>246</td>
<td>5.82</td>
<td>246</td>
<td>5.82</td>
<td>246</td>
<td>5.82</td>
<td>246</td>
<td>5.82</td>
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<tr>
<td>641.leela_s</td>
<td>16</td>
<td>347</td>
<td>4.91</td>
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<td>4.91</td>
<td>348</td>
<td>4.91</td>
<td>348</td>
<td>4.91</td>
<td>348</td>
<td>4.91</td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>16</td>
<td>176</td>
<td>16.7</td>
<td>174</td>
<td>16.9</td>
<td>173</td>
<td>17.0</td>
<td>174</td>
<td>16.9</td>
<td>173</td>
<td>17.0</td>
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<tr>
<td>657.xz_s</td>
<td>16</td>
<td>326</td>
<td>19.0</td>
<td>326</td>
<td>19.0</td>
<td>326</td>
<td>19.0</td>
<td>326</td>
<td>19.0</td>
<td>326</td>
<td>19.0</td>
</tr>
</tbody>
</table>

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

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

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:
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"

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

(Continued on next page)
Supermicro
SuperStorage 6029P-E1CR24H
(X11DSC+, Intel Xeon Silver 4215R)

SPEC®2017_int_base = 10.1
SPEC®2017_int_peak = 10.4

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

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

General Notes (Continued)

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 Settings:
Power Technology = Custom
Power Performance Tuning = BIOS Controls EPB
ENERGY_PERF_BIAS_CFG mode = Performance
Hyper-Threading = Disable
Stale AtoS = Disable
Patrol Scrub = Disable

Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r6365 of 2019-08-21 295195f888a3d7edbble646a485a0011
running on RHEL81-01 Tue Sep 8 01:52:19 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) Silver 4215R CPU @ 3.20GHz
  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
CPU(s): 16
On-line CPU(s) list: 0-15
Thread(s) per core: 1

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

**Supermicro**

SuperStorage 6029P-E1CR24H  
(X11DSC+, Intel Xeon Silver 4215R)

<table>
<thead>
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</table>

**CPU2017 License:** 001176  
**Test Date:** Sep-2020  
**Test Sponsor:** Supermicro  
**Hardware Availability:** Feb-2020  
**Tested by:** Supermicro  
**Software Availability:** Apr-2020

### Platform Notes (Continued)

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) Silver 4215R CPU @ 3.20GHz  
Stepping: 7  
CPU MHz: 1000.001  
BogoMIPS: 6400.00  
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 pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pmd imprgb rdtsscp lm constant tsc arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc cpuid aperfmperf pni pclmulqdq dtes64 monitor ds_cpl vmx 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 abtm 3dmowprefetch cpuid_fault epb cat_l3 cdp_l3 invpcid_single intel_ppin ssbd mba ibrs ibpb ibrs_enhanced tpr_shadow vnmi flexpriority etp 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 avx512v1 xsaveopt xsavec xsaveopt xsaves cqm_llc cqm_occup_llc cqm_mbb_total cqm_mbb_local dtherm ida arat pln pts hwp_epp pku ospke avx512_vnni md_clear flush_l1d arch_capabilities

From numactl --hardware WARNING: a numactl 'node' might or might not correspond to a physical chip.

<table>
<thead>
<tr>
<th>available: 2 nodes (0-1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>node 0 cpus: 0 1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>node 0 size: 192120 MB</td>
</tr>
<tr>
<td>node 0 free: 191641 MB</td>
</tr>
<tr>
<td>node 1 cpus: 8 9 10 11 12 13 14 15</td>
</tr>
<tr>
<td>node 1 size: 193508 MB</td>
</tr>
<tr>
<td>node 1 free: 193141 MB</td>
</tr>
<tr>
<td>node distances:</td>
</tr>
<tr>
<td>node 0 1</td>
</tr>
<tr>
<td>0: 10 21</td>
</tr>
<tr>
<td>1: 21 10</td>
</tr>
</tbody>
</table>

(Continued on next page)
Supermicro
SuperStorage 6029P-E1CR24H (X11DSC+, Intel Xeon Silver 4215R)

SPEC®2017_int_base = 10.1
SPEC®2017_int_peak = 10.4

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

Platform Notes (Continued)

From /proc/meminfo
MemTotal: 394883680 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"
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 RHEL81-01 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 8 01:51

SPEC is set to: /home/cpu2017

Filesystem Type Size Used Avail Use% Mounted on
/dev/sda3 xfs 185G 83G 102G 45% /

From /sys/devices/virtual/dmi/id
BIOS: American Megatrends Inc. 3.2 10/18/2019
Vendor: pm_2019-10-08_18:11:34
Product: ppm_2019-10-08_18:11:37
Serial: ps_2019-10-08_18:11:38

(Continued on next page)
Supermicro
SuperStorage 6029P-E1CR24H (X11DSC+, Intel Xeon Silver 4215R)

SPEC CPU®2017 Integer Speed Result

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</table>

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

Platform Notes (Continued)

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

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
| 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) |
|   | 600.perlbench_s(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) |
|   | 600.perlbench_s(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. |

(Continued on next page)
Supermicro
SuperStorage 6029P-E1CR24H
(X11DSC+, Intel Xeon Silver 4215R)

SPECspeed®2017_int_base = 10.1
SPECspeed®2017_int_peak = 10.4

Compiler Version Notes (Continued)

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)
64, Version 19.1.1.217 Build 20200306
Copyright (C) 1985-2020 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
## SPEC CPU®2017 Integer Speed Result

### Supermicro

SuperStorage 6029P-E1CR24H
(X11DSC+, Intel Xeon Silver 4215R)

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<tr>
<td>Software Availability</td>
<td>Apr-2020</td>
</tr>
</tbody>
</table>

### 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 -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 -Wl,-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`
- `-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.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`

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

Supermicro
SuperStorage 6029P-E1CR24H (X11DSC+, Intel Xeon Silver 4215R)

| SPECspeed®2017_int_base = 10.1 |
| SPECspeed®2017_int_peak = 10.4 |

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

Peak Portability Flags (Continued)

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:

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

625.x264_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:

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

## Supermicro

SuperStorage 6029P-E1CR24H  
(X11DSC+, Intel Xeon Silver 4215R)

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### Peak Optimization Flags (Continued)

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:


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