Cisco Systems

Cisco UCS C225 M6 (AMD EPYC 7453 28-Core)

| SPECspeed\textsuperscript{2017}_int_base = 11.2 |
| SPECspeed\textsuperscript{2017}_int_peak = 11.2 |

CPU2017 License: 9019
Test Sponsor: Cisco Systems
Tested by: Cisco Systems

Test Date: Oct-2021
Hardware Availability: Jun-2021
Software Availability: Jun-2021

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</table>

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**Hardware**

- **CPU Name:** AMD EPYC 7453
- **Max MHz:** 3450
- **Nominal:** 2750
- **Enabled:** 56 cores, 2 chips
- **Orderable:** 1.2 chips
- **Cache L1:** 32 KB I + 32 KB D on chip per core
- **L2:** 512 KB I+D on chip per core
- **L3:** 64 MB I+D on chip per chip, 16 MB shared / 7 cores
- **Other:** None
- **Memory:** 2 TB (16 x 128 GB 4Rx4 PC4-3200AA-L)
- **Storage:** 1 x 1.9 TB SSD SATA
- **Other:** None

---

**Software**

- **OS:** SUSE Linux Enterprise Server 15 SP3 (x86_64)
  - kernel version 5.3.18-57-default
- **Compiler:** C/C++/Fortran: Version 3.0.0 of AOCC
- **Parallel:** Yes
- **Firmware:** Version 4.2.1c released Aug-2021
- **File System:** xfs
- **System State:** Run level 3 (multi-user)
- **Base Pointers:** 64-bit
- **Peak Pointers:** 64-bit
- **Other:** jemalloc: jemalloc memory allocator library v5.1.0
- **Power Management:** BIOS and OS set to prefer performance at the cost of additional power usage
SPEC CPU®2017 Integer Speed Result

Cisco Systems
Cisco UCS C225 M6 (AMD EPYC 7453 28-Core)

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Results Table

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**SPECspeed®2017_int_base = 11.2**
**SPECspeed®2017_int_peak = 11.2**

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

Compiler Notes

The AMD64 AOCC Compiler Suite is available at http://developer.amd.com/amd-aocc/

Submit Notes

The config file option 'submit' was used.
'numactl' was used to bind copies to the cores.
See the configuration file for details.

Operating System Notes

'ulimit -s unlimited' was used to set environment stack size
'ulimit -l 2097152' was used to set environment locked pages in memory limit

runcpu command invoked through numactl i.e.:
numactl --interleave=all runcpu <etc>

Set dirty_ratio=8 to limit dirty cache to 8% of memory
Set swappiness=1 to swap only if necessary
Set zone_reclaim_mode=1 to free local node memory and avoid remote memory
sync then drop_caches=3 to reset caches before invoking runcpu
ASLR is disabled to reduce run-to-run issues.
dirty_ratio, swappiness, zone_reclaim_mode, drop_caches and ASLR were all set using privileged echo (e.g. echo 1 > /proc/sys/vm/swappiness).

(Continued on next page)
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Cisco UCS C225 M6 (AMD EPYC 7453 28-Core)

SPEC CPU®2017 Integer Speed Result

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Cisco UCS C225 M6 (AMD EPYC 7453 28-Core)

SPECspeed®2017_int_base = 11.2
SPECspeed®2017_int_peak = 11.2

CPU2017 License: 9019
Test Sponsor: Cisco Systems
Tested by: Cisco Systems

Test Date: Oct-2021
Hardware Availability: Jun-2021
Software Availability: Jun-2021

Operating System Notes (Continued)

Transparent huge pages set to 'always' for this run (OS default)

Environment Variables Notes

Environment variables set by runcpu before the start of the run:
GOMP_CPU_AFFINITY = "0-55"
LD_LIBRARY_PATH = 
"/home/cpu2017/amd_speed_aocc300_milan_B_lib/lib;/home/cpu2017/amd_speed_aocc300_milan_B_lib/lib32;"
MALLOC_CONF = "retain:true"
OMP_DYNAMIC = "false"
OMP_SCHEDULE = "static"
OMP_STACKSIZE = "16G"
OMP_THREAD_LIMIT = "56"

Environment variables set by runcpu during the 602.gcc_s peak run:
GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 605.mcf_s peak run:
GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 620.omnetpp_s peak run:
GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 623.xalancbmk_s peak run:
GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 625.x264_s peak run:
GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 641.leela_s peak run:
GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 648.exchange2_s peak run:
GOMP_CPU_AFFINITY = "0"

General Notes

Binaries were compiled on a system with 2x AMD EPYC 7742 CPU + 1TiB Memory using openSUSE 15.2

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)
Cisco Systems
Cisco UCS C225 M6 (AMD EPYC 7453 28-Core)

SPECspeed®2017_int_base = 11.2
SPECspeed®2017_int_peak = 11.2

CPU2017 License: 9019
Test Date: Oct-2021
Test Sponsor: Cisco Systems
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Tested by: Cisco Systems
Software Availability: Jun-2021

General Notes (Continued)
is mitigated in the system as tested and documented.
jemalloc: configured and built with GCC v4.8.2 in RHEL 7.4 (No options specified)
jemalloc 5.1.0 is available here:
https://github.com/jemalloc/jemalloc/releases/download/5.1.0/jemalloc-5.1.0.tar.bz2

Platform Notes
BIOS Configuration
SMT Mode set to Disabled
NUMA nodes per socket set to NPS1
ACPI SRAT L3 Cache As NUMA Domain set to Enabled
DRAM Scrub Time set to Disabled
Determinism Slider set to Power
L1 Stream HW Prefetcher set to Enabled
APBDIS set to 1

Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16aacf64d
running on localhost Thu Oct 21 12:39:25 2021

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 : AMD EPYC 7453 28-Core Processor
  2 "physical id"s (chips)
  56 "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 : 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 28 29 30
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 28 29 30

From lscpu from util-linux 2.36.2:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
Address sizes: 48 bits physical, 48 bits virtual
CPU(s): 56
On-line CPU(s) list: 0-55

(Continued on next page)
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Platform Notes (Continued)

Thread(s) per core: 1
Core(s) per socket: 28
Socket(s): 2
NUMA node(s): 8
Vendor ID: AuthenticAMD
CPU family: 25
Model: 1
Model name: AMD EPYC 7453 28-Core Processor
Stepping: 1
Frequency boost: enabled
CPU MHz: 1496.925
CPU max MHz: 2750.0000
CPU min MHz: 1500.0000
BogoMIPS: 5489.44
Virtualization: AMD-V
L1d cache: 1.8 MiB
L1i cache: 1.8 MiB
L2 cache: 28 MiB
L3 cache: 128 MiB
NUMA node0 CPU(s): 0-6
NUMA node1 CPU(s): 7-13
NUMA node2 CPU(s): 14-20
NUMA node3 CPU(s): 21-27
NUMA node4 CPU(s): 28-34
NUMA node5 CPU(s): 35-41
NUMA node6 CPU(s): 42-48
NUMA node7 CPU(s): 49-55
Vulnerability Itlb multihit: Not affected
Vulnerability L1tf: Not affected
Vulnerability Mds: Not affected
Vulnerability Meltdown: Not affected
Vulnerability Spec store bypass: Mitigation; Speculative Store Bypass disabled via prctl and seccomp
Vulnerability Spectre v1: Mitigation; usercopy/swapgs barriers and _user pointer sanitation
Vulnerability Spectre v2: Mitigation; Full AMD retpoline, IBPB conditional, IBRS_FW, STIBP disabled, RSB filling
Vulnerability Srbds: Not affected
Vulnerability Tsx async abort: Not affected
Flags: fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov pat pse36 clflush mmx fxsr sse sse2 ht syscall nx mmxext fxsr_opt pdelgr rdscrp lm constant_tsc rep_good nopl nonstop_tsc cpuid extd_apicid aperfmperf pni pclmulqdq monitor ssse3 fma cx16 pcid sse4_1 sse4_2 movbe popcnt aes xsave avx f16c rdrand lahf_lm cmp_legacy svm extapic cr8_legacy abm sse4a misalgnsse 3nowprefetch osvw ibs skinit wdt tce topoext perfctr_core perfctr_nb bext perfctr_llc mwaitx ctb cat_l3 cdp_l3 invpcid_single hw_pstate ssbd mba ibrs ibpb stibp vmmcall fsgsbase bmid avx2 smep bmi2 erms invpcid cqm rdt_a rdseed adx

(Continued on next page)
Cisco Systems
Cisco UCS C225 M6 (AMD EPYC 7453 28-Core)

CPU2017 License: 9019
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Platform Notes (Continued)

smap clflushopt clwb sha ni xsaveopt xsaved xgetbv1 xsavec cqm llc cqm_occum llc
cqm mbm_total cqm mbm_local clzero irperf xsaviorpr wbcnvdm amd ppin arat npt lbrv
svm lock nrip save tsc_scale vmcb_clean flushbyaid decodeassist pausefilter
pfthreshold v_vmsave_vmload vgii umip pku ospke vaes vpclmulqdq rdpid overflow_recover
succor smca fsrm

From lscpu --cache:
NAME ONE-SIZE ALL-SIZE WAYS TYPE LEVEL SETS PHY-LINE COHERENCY-SIZE
L1d 32K 1.8M 8 Data 1 64 1 64
L1i 32K 1.8M 8 Instruction 1 64 1 64
L2 512K 28M 8 Unified 2 1024 1 64
L3 16M 128M 16 Unified 3 16384 1 64

/proc/cpuinfo cache data
cache size : 512 KB

From numactl --hardware
WARNING: a numactl 'node' might or might not correspond to a physical chip.
available: 8 nodes (0-7)
node 0 cpus: 0 1 2 3 4 5 6
node 0 size: 257858 MB
node 0 free: 257662 MB
node 1 cpus: 7 8 9 10 11 12 13
node 1 size: 258045 MB
node 1 free: 257838 MB
node 2 cpus: 14 15 16 17 18 19 20
node 2 size: 258045 MB
node 2 free: 257888 MB
node 3 cpus: 21 22 23 24 25 26 27
node 3 size: 245935 MB
node 3 free: 245783 MB
node 4 cpus: 28 29 30 31 32 33 34
node 4 size: 258011 MB
node 4 free: 257858 MB
node 5 cpus: 35 36 37 38 39 40 41
node 5 size: 258045 MB
node 5 free: 257718 MB
node 6 cpus: 42 43 44 45 46 47 48
node 6 size: 258045 MB
node 6 free: 257685 MB
node 7 cpus: 49 50 51 52 53 54 55
node 7 size: 258042 MB
node 7 free: 257906 MB
node distances:
    node 0 1 2 3 4 5 6 7
  0: 10 11 11 11 32 32 32
  1: 11 10 11 11 32 32 32

(Continued on next page)
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Platform Notes (Continued)

2:  11  11  10  11  32  32  32  32
3:  11  11  11  10  32  32  32  32
4:  32  32  32  32  10  11  11  11
5:  32  32  32  32  11  10  11  11
6:  32  32  32  32  11  11  10  11
7:  32  32  32  32  11  11  11  10

From /proc/meminfo

MemTotal:       2101280520 kB
HugePages_Total:       0
Hugepagesize:       2048 kB

/sys/devices/system/cpu/cpu*/cpufreq/scaling_governor has ondemand

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

os-release:
NAME="SLES"
VERSION="15-SP3"
VERSION_ID="15.3"
PRETTY_NAME="SUSE Linux Enterprise Server 15 SP3"
ID="sles"
ID_LIKE="suse"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:15:sp3"

uname -a:
Linux localhost 5.3.18-57-default #1 SMP Wed Apr 28 10:54:41 UTC 2021 (ba3c2e9) x86_64
x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:

CVE-2018-12207 (iTLB Multihit): Not affected
CVE-2018-3620 (L1 Terminal Fault): Not affected
Microarchitectural Data Sampling: Not affected
CVE-2017-5754 (Meltdown): Mitigation: Speculative Store Bypass disabled via prctl and seccomp
CVE-2018-3639 (Speculative Store Bypass): Mitigation: Speculative Store Bypass disabled via prctl and seccomp
CVE-2017-5753 (Spectre variant 1): Mitigation: usercopy/swapsqgs barriers and _user pointer sanitization
CVE-2017-5715 (Spectre variant 2): Mitigation: Full AMD retpoline, IBFB: conditional, IBRS_FW, STIBP: disabled, RSB filling
CVE-2020-0543 (Special Register Buffer Data Sampling): Not affected
CVE-2019-11135 (TSX Asynchronous Abort): Not affected

(Continued on next page)
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Platform Notes (Continued)

run-level 3 Oct 21 12:38

SPEC is set to: /home/cpu2017

Filesystem Type Size Used Avail Use% Mounted on
/dev/nvme0n1p3 xfs 1.5T 12G 1.5T 1% /

From /sys/devices/virtual/dmi/id
Vendor: Cisco Systems Inc
Product: UCSC-C225-M6N
Serial: WZP25230TMY

Additional information from dmidecode 3.2 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:
16x 0xCE00 M386AAG40AM3-CWE 128 GB 4 rank 3200

BIOS:
BIOS Vendor: Cisco Systems, Inc.
BIOS Version: C225M6.4.2.1c.0.0806211349
BIOS Date: 08/06/2021
BIOS Revision: 5.22

(End of data from sysinfo program)

Compiler Version Notes

-----------------------------------------------------------------------------------------------
C       | 600.perlbench_s(base, peak) 602.gcc_s(base, peak) 605.mcf_s(base, peak) 625.x264_s(base, peak) 657.xz_s(base, peak)
-----------------------------------------------------------------------------------------------
AMD clang version 12.0.0 (CLANG: AOCC_3.0.0-Build#78 2020_12_10) (based on LLVM Mirror.Version.12.0.0)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.0.0/bin
-----------------------------------------------------------------------------------------------

C++      | 620.omnetpp_s(base, peak) 623.xalancbmk_s(base, peak) 631.deepsjeng_s(base, peak) 641.leela_s(base, peak)
-----------------------------------------------------------------------------------------------
AMD clang version 12.0.0 (CLANG: AOCC_3.0.0-Build#78 2020_12_10) (based on LLVM Mirror.Version.12.0.0)

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## SPEC CPU®2017 Integer Speed Result

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### Compiler Version Notes (Continued)

- **Target:** x86_64-unknown-linux-gnu  
- **Thread model:** posix  
- **InstalledDir:** /opt/AMD/aocc-compiler-3.0.0/bin

---

#### Fortran | 648.exchange2_s(base, peak)

```
AMD clang version 12.0.0 (CLANG: AOCC_3.0.0-Build#78 2020_12_10) (based on LLVM Mirror.Version.12.0.0)  
Target: x86_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /opt/AMD/aocc-compiler-3.0.0/bin
```

---

### Base Compiler Invocation

**C benchmarks:**  
clang

**C++ benchmarks:**  
clang++

**Fortran benchmarks:**  
flang

### Base Portability Flags

- `600.perlbench_s`: -DSPEC_LINUX_X64 -DSPEC_LP64  
- `602.gcc_s`: -DSPEC_LP64  
- `605.mcf_s`: -DSPEC_LP64  
- `620.omnetpp_s`: -DSPEC_LP64  
- `623.xalan_cmk_s`: -DSPEC_LINUX -DSPEC_LP64  
- `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
Cisco Systems
Cisco UCS C225 M6 (AMD EPYC 7453 28-Core)

SPEC CPU®2017 Integer Speed Result
Copyright 2017-2021 Standard Performance Evaluation Corporation

SPECspeed®2017_int_base = 11.2
SPECspeed®2017_int_peak = 11.2

CPU2017 License: 9019
Test Sponsor: Cisco Systems
Test Date: Oct-2021
Tested by: Cisco Systems
Software Availability: Jun-2021

Base Optimization Flags

C benchmarks:
- m64 -mno-adx -mno-sse4a -Wl,-allow-multiple-definition
- Wl,-mllvm -Wl,-enable-lcm-vrp -Wl,-mllvm -Wl,-region-vectorize
- Wl,-mllvm -Wl,-function-specialize
- Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
- Wl,-mllvm -Wl,-reduce-array-computations=3 -O3 -march=znver3
- fveclib=AMDLIBM -ffast-math -flto -fstruct-layout=5
- mllvm -unroll-threshold=50 -mllvm -inline-threshold=1000
- freemap-arrays -mllvm -function-specialize -flv-function-specialization
- mllvm -enable-gvn-hoist -mllvm -global-vectorize-slp=true
- mllvm -enable-lcm-vrp -mllvm -reduce-array-computations=3 -z muldefs
- DSPEC_OPENMP -fopenmp -fopenmp=libomp -lomp -lamlidlibm -ljemalloc
- lflang -lflangrti

C++ benchmarks:
- m64 -std=c++98 -mno-adx -mno-sse4a
- Wl,-mllvm -Wl,-do-block-reorder=aggressive
- Wl,-mllvm -Wl,-region-vectorize -Wl,-mllvm -Wl,-function-specialize
- Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
- Wl,-mllvm -Wl,-reduce-array-computations=3 -O3 -march=znver3
- fveclib=AMDLIBM -ffast-math -flto -mllvm -enable-partial-unswitch
- mllvm -unroll-threshold=100 -finline-aggressive
- flv-function-specialization -mllvm -loop-unswitch-threshold=200000
- mllvm -reroll-loops -mllvm -aggressive-loop-unswitch
- mllvm -extra-vectorizer-passes -mllvm -reduce-array-computations=3
- mllvm -global-vectorize-slp=true -mllvm -convert-pow-exp-to-int=false
- z muldefs -mllvm -do-block-reorder=aggressive
- fvirtual-function-elimination -fvisibility=hidden -DSPEC_OPENMP
- fopenmp -fopenmp=libomp -lomp -lamlidlibm -ljemalloc -lflang
- lflangrti

Fortran benchmarks:
- m64 -mno-adx -mno-sse4a -Wl,-mllvm -Wl,-inline-recursion=4
- Wl,-mllvm -Wl,-lsr-in-nested-loop -Wl,-mllvm -Wl,-enable-iv-split
- Wl,-mllvm -Wl,-region-vectorize -Wl,-mllvm -Wl,-function-specialize
- Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
- Wl,-mllvm -Wl,-reduce-array-computations=3 -O3 -march=znver3
- fveclib=AMDLIBM -ffast-math -flto -z muldefs
- mllvm -unroll-aggressive -mllvm -unroll-threshold=150 -DSPEC_OPENMP
- fopenmp -fopenmp=libomp -lomp -lamlidlibm -ljemalloc -lflang
- lflangrti
SPEC CPU®2017 Integer Speed Result
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Cisco Systems
Cisco UCS C225 M6 (AMD EPYC 7453 28-Core)

SPECspeed®2017_int_base = 11.2
SPECspeed®2017_int_peak = 11.2

CPU2017 License: 9019
Test Sponsor: Cisco Systems
Tested by: Cisco Systems
Test Date: Oct-2021
Hardware Availability: Jun-2021
Software Availability: Jun-2021

Base Other Flags

C benchmarks:
- -Wno-unused-command-line-argument -Wno-return-type

C++ benchmarks:
- -Wno-unused-command-line-argument -Wno-return-type

Fortran benchmarks:
- -Wno-return-type

Peak Compiler Invocation

C benchmarks:
clang

C++ benchmarks:
clang++

Fortran benchmarks:
flang

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:
600.perlbench_s: basepeak = yes

(Continued on next page)
Cisco Systems
Cisco UCS C225 M6 (AMD EPYC 7453 28-Core)

## SPEC CPU®2017 Integer Speed Result

**CPU2017 License:** 9019  
**Test Sponsor:** Cisco Systems  
**Tested by:** Cisco Systems  
**Test Date:** Oct-2021  
**Hardware Availability:** Jun-2021  
**Software Availability:** Jun-2021

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**SPECspeed®2017_int_base = 11.2**

**SPECspeed®2017_int_peak = 11.2**

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### Peak Optimization Flags (Continued)

602.gcc_s (continued):
-`-mllvm -function-specialize`
-`-mllvm -enable-licm-vrp`
-`-mllvm -reduce-array-computations=3`
-`-DSPEC_OPENMP`
-`-fopenmp`
-`-fopenmp=libomp`
-`-lomp`
-`-lamdlibm`
-`-ljemalloc`
-`-lflang`

605.mcf_s: Same as 602.gcc_s

625.x264_s: Same as 602.gcc_s

657.xz_s: basepeak = yes

### C++ benchmarks:

620.omnetpp_s:
- `-m64`
- `-std=c++98`
- `-mno-adx`
- `-mno-sse4a`
- `-W1, -mllvm -W1, -do-block-reorder=aggressive`
- `-W1, -mllvm -W1, -function-specialize`
- `-W1, -mllvm -W1, -align-all-nofallthru-blocks=6`
- `-W1, -mllvm -W1, -reduce-array-computations=3 -Ofast`
- `-march=znver3 -fveclib=AMDLIBM -ffast-math -flto`
- `-finline-aggressive -mllvm -unroll-threshold=100`
- `-fly-function-specialization -mllvm -enable-licm-vrp`
- `-mllvm -reorder-loops -mllvm -aggressive-loop-unswitch`
- `-mllvm -reduce-array-computations=3`
- `-mllvm -global-vectorize-slp=true`
- `-mllvm -do-block-reorder=aggressive`
- `-fvirtual-function-elimination -fvisibility=hidden`
- `-DSPEC_OPENMP -fopenmp -fopenmp=libomp -lomp -lamdlibm -ljemalloc -lflang`

623.xalancbmk_s: Same as 620.omnetpp_s

631.deepsjeng_s: basepeak = yes

641.leela_s: Same as 620.omnetpp_s

### Fortran benchmarks:

- `-m64`
- `-mno-adx`
- `-mno-sse4a`
- `-W1, -mllvm -W1, -inline-recursion=4`
- `-W1, -mllvm -W1, -isr-in-nested-loop`
- `-W1, -mllvm -W1, -enable-iv-split`
- `-W1, -mllvm -W1, -function-specialize`
- `-W1, -mllvm -W1, -align-all-nofallthru-blocks=6`
- `-W1, -mllvm -W1, -reduce-array-computations=3 -O3 -march=znver3`
- `-fveclib=AMDLIBM -ffast-math -flto -mllvm -unroll-aggressive`
- `-mllvm -unroll-threshold=150 -DSPEC_OPENMP -fopenmp -fopenmp=libomp -lomp -lamdlibm -ljemalloc -lflang`
## SPEC CPU®2017 Integer Speed Result

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</tr>
</tbody>
</table>

### Peak Other Flags

- **C benchmarks:**
  - `-Wno-unused-command-line-argument`  
  - `-Wno-return-type`

- **C++ benchmarks:**
  - `-Wno-unused-command-line-argument`  
  - `-Wno-return-type`

- **Fortran benchmarks:**
  - `-Wno-return-type`

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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