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ansible-xcp-zfs

ARMv8 Neoverse-N1 testing on Ubuntu 20.04 via the Phoronix Test Suite.

Automated Executive Summary

awx-zfs-gp2-5diskraidz1 had the most wins, coming in first place for 80% of the tests.

Test Systems:

Ansible-XCP-ZFS

ansible-xcp-zfs test 2

Processor: 2 x Intel Xeon E5-2667 v2 (3 Cores), Motherboard: Xen HVM domU v4.13, Chipset: Intel 440FX 82441FX PMC, Memory: 4096MB, Disk: 25GB, Graphics: bochs-drmdrmfb

OS: Ubuntu 20.04, Kernel: 5.4.0-73-generic (x86_64), Compiler: GCC 9.3.0, File-System: ext4, Screen Resolution: 1024x768, System Layer: Xen HVM domU 4.13

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,gm2 --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-9-HskZEa/gcc-9-9.3.0/debian/tmp-nvptx/usr,hsa --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib=auto --with-tune=generic --without-cuda-driver -v
Disk Notes: MQ-DEADLINE / relatime,rw
Processor Notes: CPU Microcode: 0x42e
Security Notes: itlb_multihit: KVM: Vulnerable + l1tf: Mitigation of PTE Inversion + mds: Mitigation of Clear buffers; SMT Host state unknown + meltdown: Mitigation of PTI + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Full generic retpoline IBPB: conditional IBRS_FW STIBP: disabled RSB filling + srbds: Not affected + tsx_async_abort: Not affected

awx-zfs-gp2-5diskraidz1

Processor: ARMv8 Neoverse-N1 (16 Cores), Motherboard: Amazon EC2 r6g.4xlarge (1.0 BIOS), Chipset: Amazon Device 0200, Memory: 128GB, Disk: 32GB Amazon Elastic Block Store + 5 x 54GB Amazon Elastic Block Store, Network: Amazon Elastic

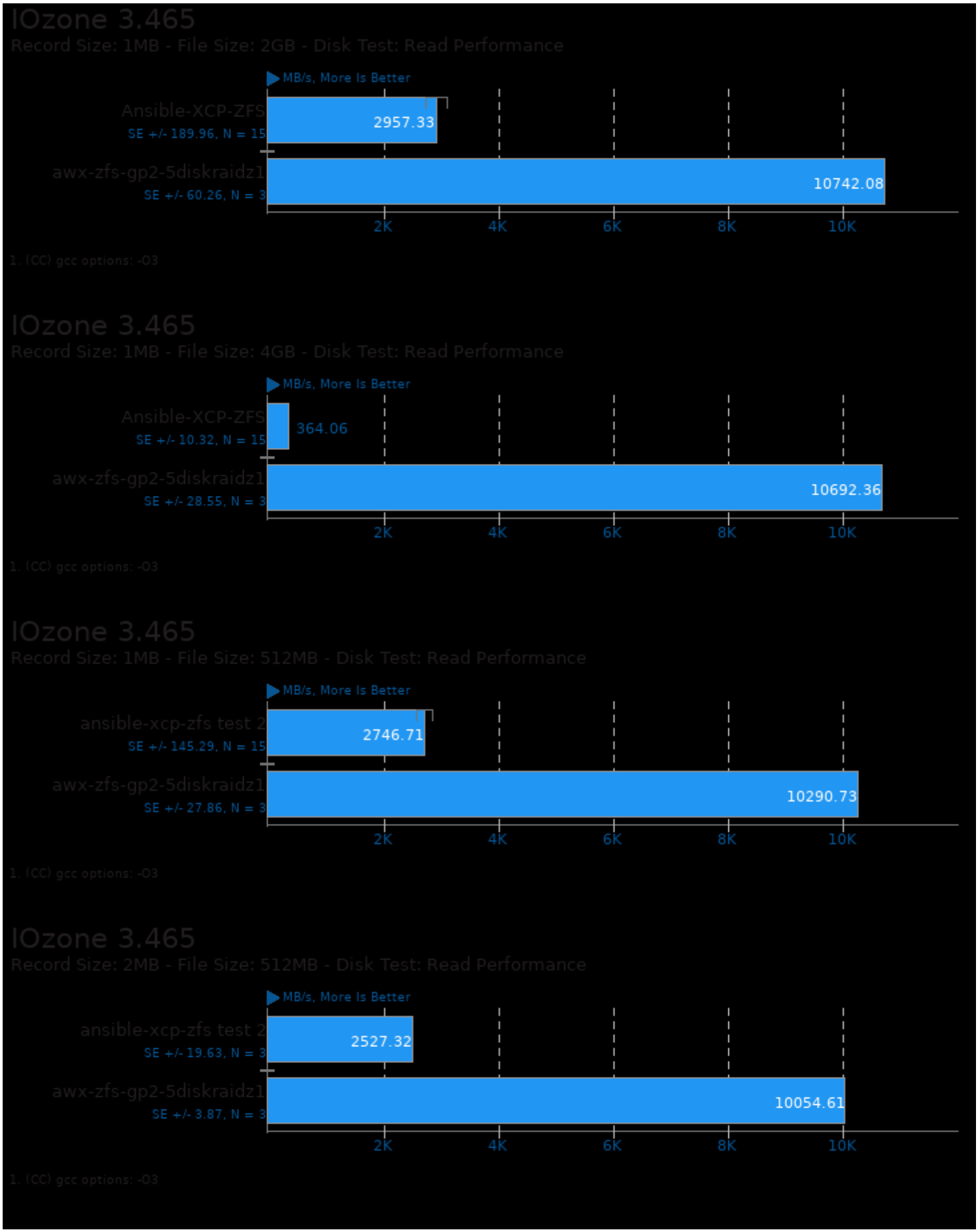
OS: Ubuntu 20.04, Kernel: 5.13.0-1031-aws (aarch64), Vulkan: 1.1.182, Compiler: GCC 9.4.0, File-System: ext4

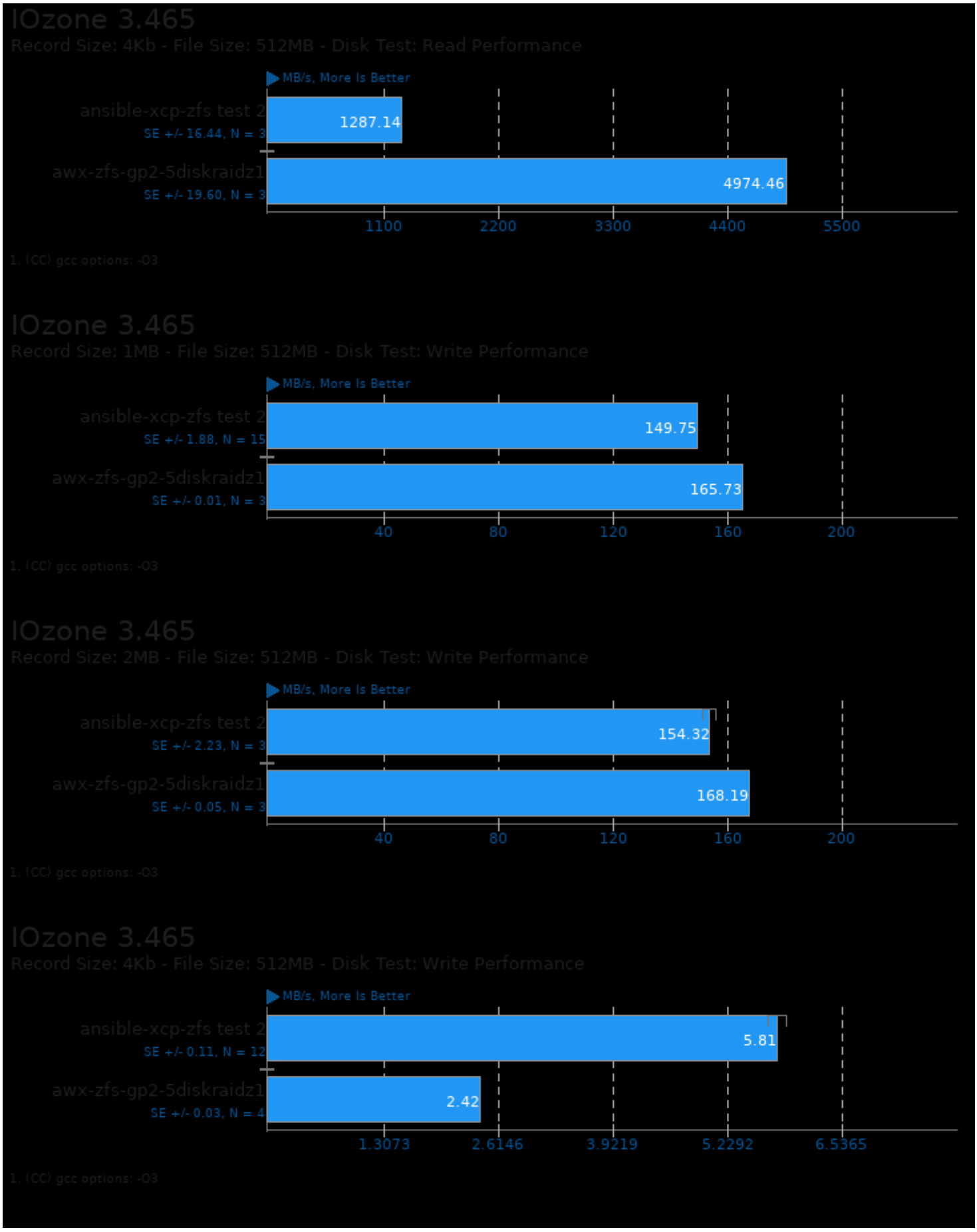
Kernel Notes: Transparent Huge Pages: madvise
Compiler Notes: --build=aarch64-linux-gnu --disable-libquadmath --disable-libquadmath-support --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-fix-cortex-a53-843419 --enable-gnu-unique-object --enable-languages=c,ada,c++,go,d,fortran,objc,obj-c++,gm2 --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-objc-gc=auto --enable-plugin --enable-shared --enable-threads=posix --host=aarch64-linux-gnu --program-prefix=aarch64-linux-gnu- --target=aarch64-linux-gnu --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-target-system-zlib=auto -v
Disk Notes: NONE / discard,relatime,rw / Block Size: 4096
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + mmio_stale_data: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl + spectre_v1: Mitigation of __user pointer sanitization + spectre_v2: Mitigation of CSV2 BHB + srbds: Not affected + tsx_async_abort: Not affected

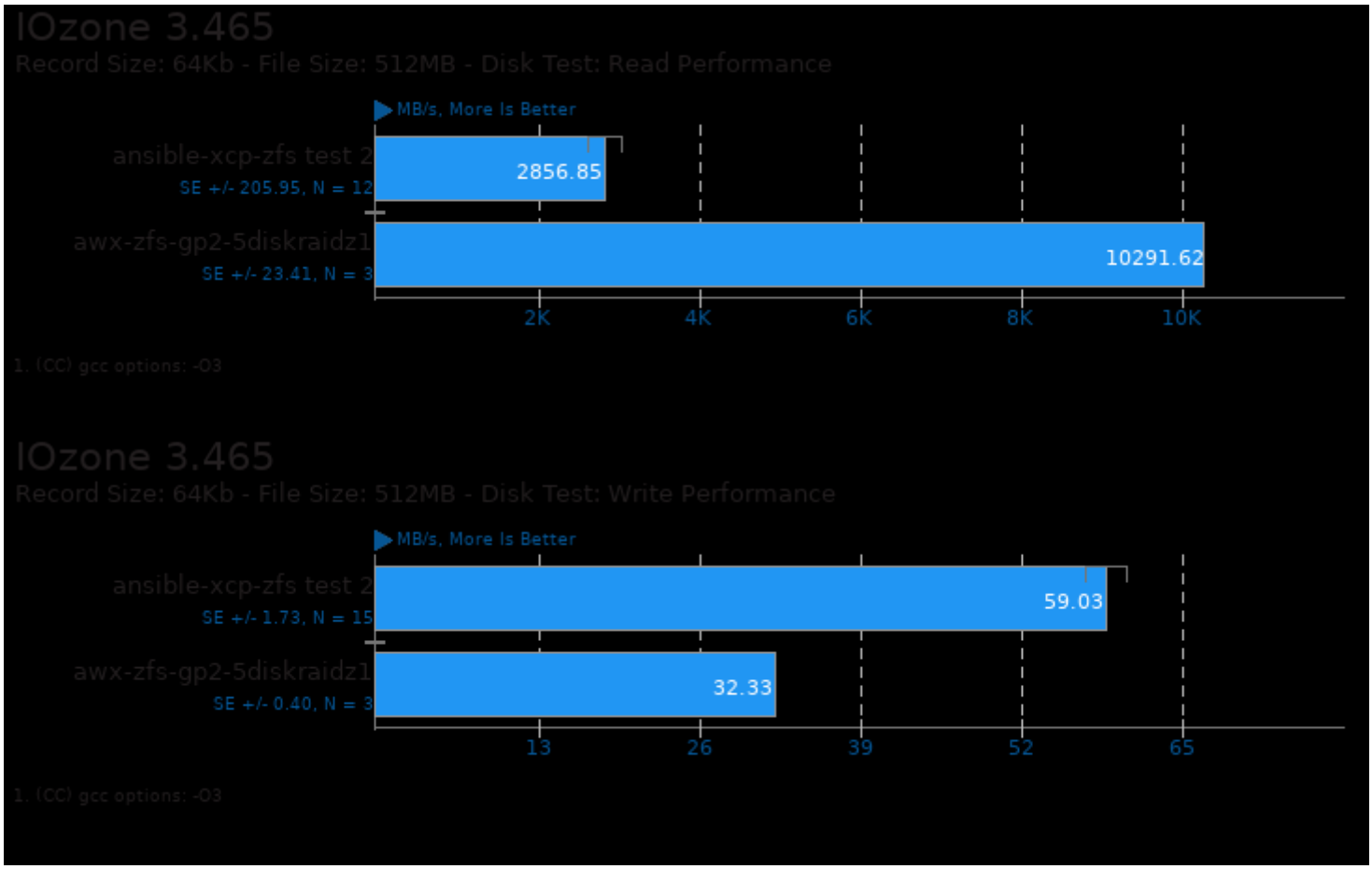
	Ansible-XCP-ZFS	ansible-xcp-zfs test 2	awx-zfs-gp2-5diskraidz1
IOzone - 1MB - 2GB - Read Performance (MB/s)	**2957**		**10742**
Normalized	27.53%		100%
Standard Deviation	24.9%		1%
IOzone - 1MB - 4GB - Read Performance (MB/s)	**364.06**		**10692**
Normalized	3.4%		100%
Standard Deviation	11%		0.5%
IOzone - 1MB - 512MB - Read Performance (MB/s)		**2747**	**10291**
Normalized		26.69%	100%
Standard Deviation		20.5%	0.5%
IOzone - 2MB - 512MB - Read Performance (MB/s)		**2527**	**10055**
Normalized		25.14%	100%
Standard Deviation		1.3%	0.1%
IOzone - 4Kb - 512MB - Read Performance (MB/s)		**1287**	**4974**
Normalized		25.87%	100%
Standard Deviation		2.2%	0.7%
IOzone - 1MB - 512MB - Write Performance (MB/s)		**149.75**	**165.73**
Normalized		90.36%	100%
Standard Deviation		4.9%	0%

ansible-xcp-zfs

IOzone - 2MB - 512MB - Write Performance (MB/s)	**154.32**	**168.19**
Normalized	91.75%	100%
Standard Deviation	2.5%	0.1%
IOzone - 4Kb - 512MB - Write Performance (MB/s)	**5.81**	**2.42**
Normalized	100%	41.65%
Standard Deviation	6.4%	2.1%
IOzone - 64Kb - 512MB - Read Performance (MB/s)	**2857**	**10292**
Normalized	27.76%	100%
Standard Deviation	25%	0.4%
IOzone - 64Kb - 512MB - Write Performance (MB/s)	**59.03**	**32.33**
Normalized	100%	54.77%
Standard Deviation	11.4%	2.1%


IOzone 3.465
Record Size: 1MB - File Size: 2GB - Disk Test: Read Performance
MB/s, More Is Better
Ansible-XCP-ZFS
SE +/- 189.96, N = 15
2957.33
awx-zfs-gp2-5diskraidz1
SE +/- 60.26, N = 3
10742.08
2K
4K
6K
8K
10K
1. (CC) gcc options: -O3
IOzone 3.465
Record Size: 1MB - File Size: 4GB - Disk Test: Read Performance
MB/s, More Is Better
Ansible-XCP-ZFS
SE +/- 10.32, N = 15
364.06
awx-zfs-gp2-5diskraidz1
SE +/- 28.55, N = 3
10692.36
2K
4K
6K
8K
10K
1. (CC) gcc options: -O3
IOzone 3.465
Record Size: 1MB - File Size: 512MB - Disk Test: Read Performance
MB/s, More Is Better
ansible-xcp-zfs test 2
SE +/- 145.29, N = 15
2746.71
awx-zfs-gp2-5diskraidz1
SE +/- 27.86, N = 3
10290.73
2K
4K
6K
8K
10K
1. (CC) gcc options: -O3
IOzone 3.465
Record Size: 2MB - File Size: 512MB - Disk Test: Read Performance
MB/s, More Is Better
ansible-xcp-zfs test 2
SE +/- 19.63, N = 3
2527.32
awx-zfs-gp2-5diskraidz1
SE +/- 3.87, N = 3
10054.61
2K
4K
6K
8K
10K
1. (CC) gcc options: -O3


IOzone 3.465
Record Size: 4Kb - File Size: 512MB - Disk Test: Read Performance
MB/s, More Is Better
ansible-xcp-zfs test 2
SE +/- 16.44, N = 3
1287.14
awx-zfs-gp2-5diskraidz1
SE +/- 19.60, N = 3
4974.46
1100
2200
3300
4400
5500
1. (CC) gcc options: -O3
IOzone 3.465
Record Size: 1MB - File Size: 512MB - Disk Test: Write Performance
MB/s, More Is Better
ansible-xcp-zfs test 2
SE +/- 1.88, N = 15
149.75
awx-zfs-gp2-5diskraidz1
SE +/- 0.01, N = 3
165.73
40
80
120
160
200
1. (CC) gcc options: -O3
IOzone 3.465
Record Size: 2MB - File Size: 512MB - Disk Test: Write Performance
MB/s, More Is Better
ansible-xcp-zfs test 2
SE +/- 2.23, N = 3
154.32
awx-zfs-gp2-5diskraidz1
SE +/- 0.05, N = 3
168.19
40
80
120
160
200
1. (CC) gcc options: -O3
IOzone 3.465
Record Size: 4Kb - File Size: 512MB - Disk Test: Write Performance
MB/s, More Is Better
ansible-xcp-zfs test 2
SE +/- 0.11, N = 12
5.81
awx-zfs-gp2-5diskraidz1
SE +/- 0.03, N = 4
2.42
1.3073
2.6146
3.9219
5.2292
6.5365
1. (CC) gcc options: -O3



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