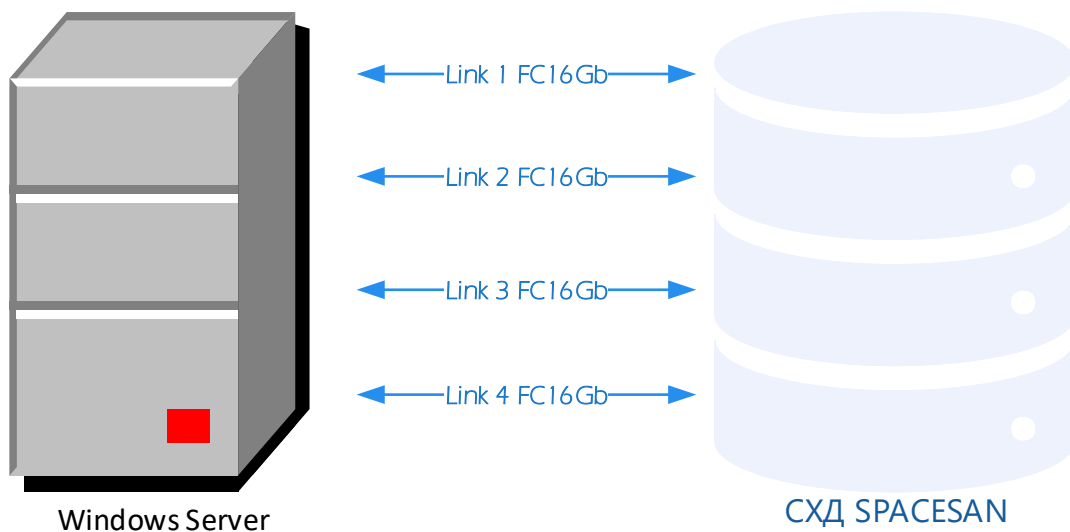


В рамках теста были задействованы:

1. Сервер на базе AIC с ОС Windows Server 2025.
2. СХД на базе Storage server SuperMicro с установленной ОС RedOS Murom 7.3.4.

Конфигурация сервера:  
Процессор: Gold 5120  
Память: 2\*16GB  
FC карты: QLE 2662L 16GB x2  
Выпуск Windows Server 2025 Standard  
Версия 24H2  
Сборка ОС 26100.1

Конфигурация СХД:  
Процессор: Silver 4316  
Память: 8\*16GB  
Диски: 12\*1.92TB SAS SSD Samsung  
FC карты: QLE 2672-CK 16GB x2  
Контроллер: HBA LSI 9500-8i x2  
ОС: REDOS Murom 7.3.4



При проведении тестов создавались следующие виды пулов:

1. stripe (пул дисков без отказоустойчивости, аналог RAID0)
2. raidz2 (пул дисков с возможностью отказа до 2 дисков, аналог RAID6)

Для проведения замеров была использована программа Crystal Disk Mark 8.0.4.

Конфигурация тестов для 12 SAS дисков:

Sequential - 4kb, 16kb, 32kb, 64kb, 256kb, 1mb.

Random - 4kb, 16kb, 32kb, 64kb, 256kb, 1mb.

All	Read (MB/s)	Write (MB/s)	Mix (MB/s)
SEQ4K Q32T1	799.03	460.29	589.98
SEQ16K Q32T1	2733.17	1573.79	2109.01
SEQ32K Q32T1	3789.12	3127.69	3824.25
SEQ64K Q32T1	4349.76	2656.83	3670.23

All	Read (MB/s)	Write (MB/s)	Mix (MB/s)
SEQ256K Q32T1	4544.91	3369.47	4307.38
RND4K Q32T1	475.55	442.83	540.15
RND16K Q32T1	2435.53	1626.47	2031.18
RND32K Q32T1	3173.03	2986.52	3836.03

All	Read (MB/s)	Write (MB/s)	Mix (MB/s)
RND64K Q32T1	4140.77	3235.31	4770.85
RND256K Q32T1	4873.77	3975.82	5076.94
RND1M Q32T1	5065.54	3918.85	4787.10
SEQ1M Q32T1	4914.44	3385.74	4035.55

[Read]  
 SEQ 4KiB (Q= 32, T= 1): 799.029 MB/s [ 195075.4 IOPS] < 162.71 us>  
 SEQ 16KiB (Q= 32, T= 1): 2733.173 MB/s [ 166819.6 IOPS] < 191.46 us>  
 SEQ 32KiB (Q= 32, T= 1): 3789.116 MB/s [ 115634.6 IOPS] < 276.38 us>  
 SEQ 64KiB (Q= 32, T= 1): 4349.756 MB/s [ 66372.0 IOPS] < 481.39 us>

[Write]  
 SEQ 4KiB (Q= 32, T= 1): 460.289 MB/s [ 112375.2 IOPS] < 284.15 us>  
 SEQ 16KiB (Q= 32, T= 1): 1573.792 MB/s [ 96056.6 IOPS] < 332.62 us>  
 SEQ 32KiB (Q= 32, T= 1): 3127.689 MB/s [ 95449.5 IOPS] < 334.49 us>  
 SEQ 64KiB (Q= 32, T= 1): 2656.828 MB/s [ 40540.0 IOPS] < 788.18 us>

[Mix] Read 50%/Write 50%  
 SEQ 4KiB (Q= 32, T= 1): 589.984 MB/s [ 144039.1 IOPS] < 221.91 us>  
 SEQ 16KiB (Q= 32, T= 1): 2109.014 MB/s [ 128724.0 IOPS] < 247.99 us>  
 SEQ 32KiB (Q= 32, T= 1): 3824.246 MB/s [ 116706.7 IOPS] < 273.55 us>  
 SEQ 64KiB (Q= 32, T= 1): 3670.232 MB/s [ 56003.3 IOPS] < 569.87 us>

Profile: Default  
 Test: 64 GiB (x5) [D: 0% (0/1024GiB)]  
 Mode: [Admin]  
 Time: Measure 5 sec / Interval 5 sec  
 Date: 2024/06/19 14:13:14  
 OS: Windows Server 2022 Server Standard (full installation) [10.0 Build 26100] (x64)

[Read]  
 SEQ 256KiB (Q= 32, T= 1): 4544.915 MB/s [ 17337.5 IOPS] < 1843.00 us>  
 RND 4KiB (Q= 32, T= 1): 475.554 MB/s [ 116102.1 IOPS] < 275.18 us>  
 RND 16KiB (Q= 32, T= 1): 2435.531 MB/s [ 148653.0 IOPS] < 214.98 us>  
 RND 32KiB (Q= 32, T= 1): 3173.035 MB/s [ 96833.3 IOPS] < 330.05 us>

[Write]  
 SEQ 256KiB (Q= 32, T= 1): 3369.469 MB/s [ 12853.5 IOPS] < 2475.90 us>  
 RND 4KiB (Q= 32, T= 1): 442.830 MB/s [ 108112.8 IOPS] < 295.31 us>  
 RND 16KiB (Q= 32, T= 1): 1626.474 MB/s [ 99272.1 IOPS] < 321.79 us>  
 RND 32KiB (Q= 32, T= 1): 2986.522 MB/s [ 91141.4 IOPS] < 350.45 us>

[Mix] Read 50%/Write 50%  
 SEQ 256KiB (Q= 32, T= 1): 4307.382 MB/s [ 16431.4 IOPS] < 1937.17 us>  
 RND 4KiB (Q= 32, T= 1): 540.155 MB/s [ 131873.8 IOPS] < 242.27 us>  
 RND 16KiB (Q= 32, T= 1): 2031.176 MB/s [ 123973.1 IOPS] < 257.40 us>  
 RND 32KiB (Q= 32, T= 1): 3836.033 MB/s [ 117066.4 IOPS] < 272.71 us>

Profile: Default  
 Test: 64 GiB (x5) [D: 0% (0/1024GiB)]  
 Mode: [Admin]  
 Time: Measure 5 sec / Interval 5 sec  
 Date: 2024/06/19 14:27:01  
 OS: Windows Server 2022 Server Standard (full installation) [10.0 Build 26100] (x64)

[Read]  
 RND 64KiB (Q= 32, T= 1): 4140.768 MB/s [ 63183.1 IOPS] < 505.90 us>  
 RND 256KiB (Q= 32, T= 1): 4873.772 MB/s [ 18592.0 IOPS] < 1719.47 us>  
 RND 1MiB (Q= 32, T= 1): 5065.543 MB/s [ 4830.9 IOPS] < 6602.05 us>  
 SEQ 1MiB (Q= 32, T= 1): 4914.443 MB/s [ 4686.8 IOPS] < 6808.96 us>

[Write]  
 RND 64KiB (Q= 32, T= 1): 3235.311 MB/s [ 49366.9 IOPS] < 646.69 us>  
 RND 256KiB (Q= 32, T= 1): 3975.819 MB/s [ 15166.5 IOPS] < 2098.78 us>  
 RND 1MiB (Q= 32, T= 1): 3918.852 MB/s [ 3737.3 IOPS] < 8460.84 us>  
 SEQ 1MiB (Q= 32, T= 1): 3385.745 MB/s [ 3228.9 IOPS] < 9789.06 us>

[Mix] Read 50%/Write 50%  
 RND 64KiB (Q= 32, T= 1): 4770.851 MB/s [ 72797.4 IOPS] < 438.45 us>  
 RND 256KiB (Q= 32, T= 1): 5076.936 MB/s [ 19367.0 IOPS] < 1646.51 us>  
 RND 1MiB (Q= 32, T= 1): 4787.096 MB/s [ 4565.3 IOPS] < 6925.94 us>  
 SEQ 1MiB (Q= 32, T= 1): 4035.545 MB/s [ 3848.6 IOPS] < 8212.62 us>

Profile: Default  
 Test: 64 GiB (x5) [D: 0% (0/1024GiB)]  
 Mode: [Admin]  
 Time: Measure 5 sec / Interval 5 sec  
 Date: 2024/06/19 14:36:42  
 OS: Windows Server 2022 Server Standard (full installation) [10.0 Build 26100] (x64)

	Read (MB/s)	Write (MB/s)	Mix (MB/s)
SEQ4K Q32T1	782.81	432.48	545.13
SEQ16K Q32T1	2835.04	1589.27	1809.12
SEQ32K Q32T1	3807.01	2383.97	3210.24
SEQ64K Q32T1	4242.46	2846.85	3952.93

	Read (MB/s)	Write (MB/s)	Mix (MB/s)
SEQ256K Q32T1	4654.99	3418.31	4377.89
RND4K Q32T1	596.64	268.07	397.60
RND16K Q32T1	2335.01	1125.08	1552.39
RND32K Q32T1	4052.64	2164.38	2964.03

	Read (MB/s)	Write (MB/s)	Mix (MB/s)
RND64K Q32T1	4065.46	2485.41	3696.57
RND256K Q32T1	4986.57	2993.56	4091.27
RND1M Q32T1	5095.30	3088.24	4082.67
SEQ1M Q32T1	4659.53	3522.36	4218.95

[Read]  
 SEQ 4KiB (Q= 32, T= 1): 782.813 MB/s [ 191116.5 IOPS] < 166.94 us>  
 SEQ 16KiB (Q= 32, T= 1): 2835.042 MB/s [ 173037.2 IOPS] < 184.27 us>  
 SEQ 32KiB (Q= 32, T= 1): 3807.005 MB/s [ 116180.6 IOPS] < 275.12 us>  
 SEQ 64KiB (Q= 32, T= 1): 4242.458 MB/s [ 64734.8 IOPS] < 493.82 us>

[Write]  
 SEQ 4KiB (Q= 32, T= 1): 432.476 MB/s [ 105585.0 IOPS] < 302.61 us>  
 SEQ 16KiB (Q= 32, T= 1): 1589.270 MB/s [ 97001.3 IOPS] < 328.77 us>  
 SEQ 32KiB (Q= 32, T= 1): 2383.966 MB/s [ 72752.9 IOPS] < 438.59 us>  
 SEQ 64KiB (Q= 32, T= 1): 2846.854 MB/s [ 43439.5 IOPS] < 734.56 us>

[Mix] Read 50%/Write 50%  
 SEQ 4KiB (Q= 32, T= 1): 545.130 MB/s [ 133088.4 IOPS] < 239.15 us>  
 SEQ 16KiB (Q= 32, T= 1): 1809.117 MB/s [ 110419.7 IOPS] < 288.55 us>  
 SEQ 32KiB (Q= 32, T= 1): 3210.235 MB/s [ 97968.6 IOPS] < 325.67 us>  
 SEQ 64KiB (Q= 32, T= 1): 3952.932 MB/s [ 60317.0 IOPS] < 528.98 us>

Profile: Default  
 Test: 64 GiB (x5) [D: 0% (0/1024GiB)]  
 Mode: [Admin]  
 Time: Measure 5 sec / Interval 5 sec  
 Date: 2024/06/19 15:04:34  
 OS: Windows Server 2022 Server Standard (full installation) [10.0 Build 26100] (x64)

[Read]  
 SEQ 256KiB (Q= 32, T= 1): 4654.995 MB/s [ 17757.4 IOPS] < 1799.30 us>  
 RND 4KiB (Q= 32, T= 1): 596.636 MB/s [ 145663.1 IOPS] < 219.41 us>  
 RND 16KiB (Q= 32, T= 1): 2335.007 MB/s [ 142517.5 IOPS] < 224.30 us>  
 RND 32KiB (Q= 32, T= 1): 4052.639 MB/s [ 123676.7 IOPS] < 258.36 us>

[Write]  
 SEQ 256KiB (Q= 32, T= 1): 3418.307 MB/s [ 13039.8 IOPS] < 2440.94 us>  
 RND 4KiB (Q= 32, T= 1): 268.071 MB/s [ 65447.0 IOPS] < 487.96 us>  
 RND 16KiB (Q= 32, T= 1): 1125.078 MB/s [ 68669.3 IOPS] < 465.41 us>  
 RND 32KiB (Q= 32, T= 1): 2164.378 MB/s [ 66051.6 IOPS] < 483.55 us>

[Mix] Read 50%/Write 50%  
 SEQ 256KiB (Q= 32, T= 1): 4377.890 MB/s [ 16700.3 IOPS] < 1905.31 us>  
 RND 4KiB (Q= 32, T= 1): 397.599 MB/s [ 97070.1 IOPS] < 328.94 us>  
 RND 16KiB (Q= 32, T= 1): 1552.387 MB/s [ 94750.2 IOPS] < 336.88 us>  
 RND 32KiB (Q= 32, T= 1): 2964.027 MB/s [ 90454.9 IOPS] < 353.31 us>

Profile: Default  
 Test: 64 GiB (x5) [D: 0% (0/1024GiB)]  
 Mode: [Admin]  
 Time: Measure 5 sec / Interval 5 sec  
 Date: 2024/06/19 15:14:40  
 OS: Windows Server 2022 Server Standard (full installation) [10.0 Build 26100] (x64)

[Read]  
 RND 64KiB (Q= 32, T= 1): 4140.768 MB/s [ 63183.1 IOPS] < 505.90 us>  
 RND 256KiB (Q= 32, T= 1): 4873.772 MB/s [ 18592.0 IOPS] < 1719.47 us>  
 RND 1MiB (Q= 32, T= 1): 5065.543 MB/s [ 4830.9 IOPS] < 6602.05 us>  
 SEQ 1MiB (Q= 32, T= 1): 4914.443 MB/s [ 4686.8 IOPS] < 6808.96 us>

[Write]  
 RND 64KiB (Q= 32, T= 1): 3235.311 MB/s [ 49366.9 IOPS] < 646.69 us>  
 RND 256KiB (Q= 32, T= 1): 3975.819 MB/s [ 15166.5 IOPS] < 2098.78 us>  
 RND 1MiB (Q= 32, T= 1): 3918.852 MB/s [ 3737.3 IOPS] < 8460.84 us>  
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[Mix] Read 50%/Write 50%  
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 RND 1MiB (Q= 32, T= 1): 4787.096 MB/s [ 4565.3 IOPS] < 6925.94 us>  
 SEQ 1MiB (Q= 32, T= 1): 4035.545 MB/s [ 3848.6 IOPS] < 8212.62 us>

Profile: Default  
 Test: 64 GiB (x5) [D: 0% (0/1024GiB)]  
 Mode: [Admin]  
 Time: Measure 5 sec / Interval 5 sec  
 Date: 2024/06/19 14:36:42  
 OS: Windows Server 2022 Server Standard (full installation) [10.0 Build 26100] (x64)