Offsite Archiving to Tape
ATTO XstreamCORE® intelligent Bridges

Data Backup

Back up data remains one of the primary ways of protecting a company’s digital assets from data loss, data corruption, and ransomware. Inevitably, a company will experience one of these issues. Protecting data via backup can avoid all manner of undesirable situations from loss of time and revenue to permanent loss of critical business data or digital assets.

Add Speed and Flexibility to Backup Processes

ATTO XstreamCORE® intelligent Bridges act as external adapters providing connectivity and adding a common set of services and features to SAS tape devices. ATTO XstreamCORE eliminates the costs of up to two extra servers and the disk backup storage array as well as reduces the cost of managing data archiving.

With ATTO XstreamCORE intelligent bridges and exclusive ATTO SpeedWrite™ technology, users can archive directly to a remotely located tape drive and maintain sufficient speeds to meet customer’s demanding backup windows.

While backup involves many different criteria, media type and location are the primary considerations. Media are usually of two types: large capacity hard drives in a JBOD or RAID configuration or tapes used with either a standalone tape drive or a tape library. When referring to location, the two types are onsite backup and offsite backup, each with its pros and cons.

Tape backup pros/cons:
- Lowest cost per GB; zero electrical cost for data at rest; creates an ‘air gap’ for better protection against viruses and ransomware than using disks; generally slower backup and restore time than disk.

Disk backup pros/cons:
- Faster backup and restore times; more costly than tape and more costly to keep running (electricity). Disk is more susceptible to cyber threats because it is always connected and on.

Onsite backup pros/cons:
- Quicker backup and restore times usually; no protection against on-site disruptions and disasters.

Offsite backup pros/cons:
- Usually slower backup and restore times compared to onsite; protection against onsite disruptions and disasters.
This remote site disk storage can be accessed in case of an emergency at the primary site. However, the remote site backup storage is primarily used as a staging area to archive data to tape. The reason that data is backed up to disk storage at the remote site and not directly to the tape library is latency. As the distance between the two sites increase, there is more latency per packet. Tape drives are inherently single-threaded and thus can only handle a single stream of data at a time. Disk Storage can handle multiple streams at once which helps to mitigate the impact of latency from the distance between sites.

With disk-based backup at the remote site, multiple streams of data can be handled allowing some mitigation of latency caused by the distance.

In Figure 2, the primary site is sending data to be backed up directly to the tape library at the remote site. However, since tape drives are sequential and can only handle a single stream of data, the primary site has to wait until data stream A completes before it can send data stream B. The combination of only handling a single stream of data and the latency introduced by distance has a dramatic impact on tape performance. This is why you do not see solutions that archive directly to tape drives in remote sites.

The downside of such configurations illustrated in Figure 1 are the costs of the additional storage arrays as well as the additional servers. Also, the backup storage array needs to have enough capacity to perform a full backup of the data from the primary site which could add cost.

Then there are operational costs of maintaining this configuration like the need to stock spare disk drives and the payroll of admins who manage the servers. Some costs can be reduced by decreasing the number of servers.

Figure 3 illustrates how ATTO XstreamCORE with SpeedWrite allows more data to be processed, increasing overall throughput even at distances of 50km.

Figure 4 shows how ATTO XstreamCORE intelligent bridges improve the setup represented in Figure 1.

**Performance with and without ATTO SpeedWrite**

<table>
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<th>Distance (km)</th>
<th>Distance Latency (μs)</th>
<th>2:1 Compression No SpeedWrite</th>
<th>2:1 Compression With SpeedWrite</th>
<th>Four LTO 8 Drive (MB/s) No SpeedWrite</th>
<th>Four LTO 8 Drive (MB/s) With SpeedWrite</th>
<th>Sixteen LTO 8 Drives (MB/s) No SpeedWrite</th>
<th>Sixteen LTO 8 Drives (MB/s) With SpeedWrite</th>
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**ATTO SpeedWrite provides up to 40% better performance even over distances up to 50 km.**