

Data Redundancy with the Overland Storage SnapScale X2

Since the inception of the computer industry, data protection has been a vital element in information technology infrastructure. New challenges have evolved reflecting the vast changes in the value of data systems. For example, in the late 1980's, a new technology trend represented a different and better way to protect data: redundant array of independent drives (RAID).

The Challenges of Legacy RAID Technology

Historic RAID implementations such as RAID 5, 6 and 10 have been widely deployed to enable protection and availability throughout IT infrastructures. When RAID was first conceived over three decades ago, it was a genuine improvement in data protection, but time and technology have moved on. Traditional RAID imposes undesirable limitations in many situations. These constraints will grow ever more onerous, further compromising business operations in the years to come. In this technology brief, we highlight a more advanced solution for overcoming limitations traditional RAID technology imposes.

One issue caused by traditional RAID is the significant performance penalty it inflicts on data access after a hard drive failure. When RAID was first conceived, hard drive sizes were measured in megabytes and rebuild times were insignificant. However, as drive sizes have grown exponentially, RAID rebuilds have grown and now can take hours or days to complete. Furthermore, if RAID rebuilds are given low background priority, they can even take weeks to complete. Administrators are forced to accept either poor data protection or degraded data system performance. This problem of balancing recovery time vs. performance levels forces corporations to accept unnecessary data loss risks.

Another problem with RAID is the increased likelihood of encountering an unrecoverable read error during an array rebuild. Although hard drive capacities have continuously improved, drive reliabilities have not kept pace increasing the chances that an unrecoverable read error will occur during a rebuild. This issue can lead to permanent data loss in the event that the array cannot recover from the read error while in a degraded state.

RAID also creates limitations on the number of hard drives that can be used to protect data. Due to the scale-up architecture of traditional RAID systems, a single storage head unit and connected expansions are only be able to support a finite number of drives. Adding more storage in this traditional architecture simply adds to the storage access bottleneck and puts data at risk due to single points of failure. This limitation also forces administrators to create islands of storage requiring separate management resources to cope with inevitable data growth.

Clustered Storage is the Better Solution

Modern information technology architectures require different data protection solutions. Overland Storage® understands that current data protection schemes need to be enhanced to meet data management requirements. As previously mentioned, relying upon traditional RAID for expansion, redundancy and data availability causes multiple issues to arise, especially as storage environments scale.

The Overland Storage SnapScale X2™ clustered NAS changes the redundancy paradigm with a new data protection scheme. The SnapScale X2 utilizes file level redundancy between groups of hard drives known as peer-sets. A peer-set is made up of either two or three drives distributed throughout the cluster on different nodes. The drive peer-sets stay in sync with one another thereby maintaining and protecting multiple copies of files residing within the cluster. All drive peer-sets included in SnapScale X2 clusters are virtualized into a single global namespace. The advantage of this approach is that administrators have a single storage pool to provision. It is also completely transparent to client systems, because they simply see a network share. This is only one example of how Overland Storage reduces management complexity. Refer to Figure 1 for an overview of clustered storage.

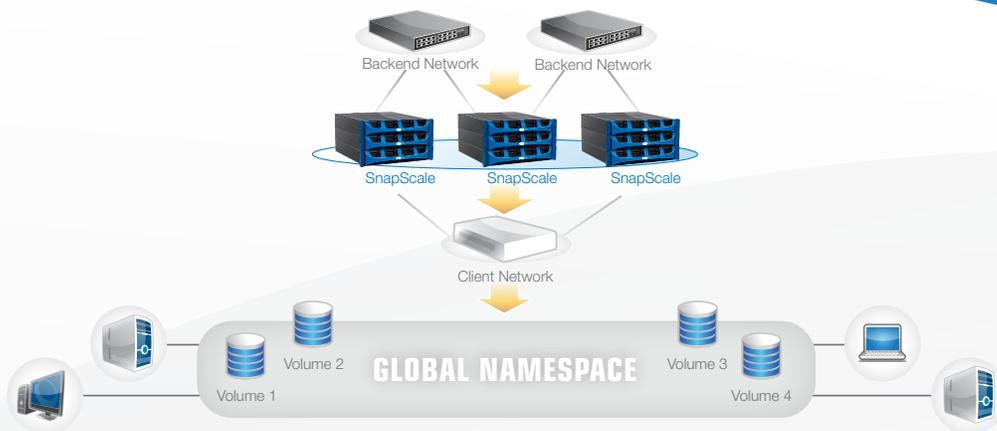


Figure 1

Benefits of the SnapScale X2

The Overland Storage SnapScale X2 clustered NAS uses 2-way or 3-way data redundancy to preserve data in the event of any drive or node failures. This redundancy technology allows SnapScale to withstand drive failure and data corruption while at the same time providing faster data recovery.

The combined benefits of SnapScale X2 redundancy are numerous. First, all data written to a SnapScale cluster is evenly distributed across all available nodes. This maximizes processing services available to maximize I/O as well as to enable a large number of simultaneous client accesses. Second, in the event of a drive failure, the RapidRebuild™ feature automatically activates. RapidRebuild results in the SnapScale X2 moving files from remaining members of a degraded peer-set onto an available global hotspare drive. This shortens drive rebuilds significantly, returning SnapScale to high availability and ending a degraded state in the fastest possible way. Third, the peer-set architecture randomizes and distributes files evenly between drive peer-sets and different nodes. This technique constantly aligns and maximizes the speed and efficiency of storage resources while also balancing capacity utilization across the cluster. The features enable SnapScale to both protect data and boost performance all the while ensuring no disruption to access since the cluster remains continuously available.

SnapScale 2-way or 3-way redundancy also allows massive storage growth within existing clusters without having to re-stripe or rebuild RAID sets. SnapScale easily integrates new nodes within existing clusters and creates new peer-sets. In this simple manner, administrators can add usable capacity, increase redundancy as well as improve performance across the global namespace. The net result: a hassle-free storage environment.

Continuous Protection and Expansion are Available Now

Data storage needs evolve at a rapid pace. RAID is decades-old technology that cannot be the mainstay protection choice for data centers seeking performance, continuous data availability and efficient operation. Overland Storage offers advanced clustering technology that delivers a fundamentally more efficient approach to data protection; therefore, don't worry, keep growing – the SnapScale X2 can carry you now and into the future.

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