Vess™ R2000 Tech Brief

Predictive Data Migration

Feature

Predictive Data Migration (PDM) is PROMISE's unique technology that proactively detects possible drive failures before they could occur and migrates data to a new healthy drive. PDM dramatically reduces the potential for data loss as well as the likelihood of a logical drive going critical.

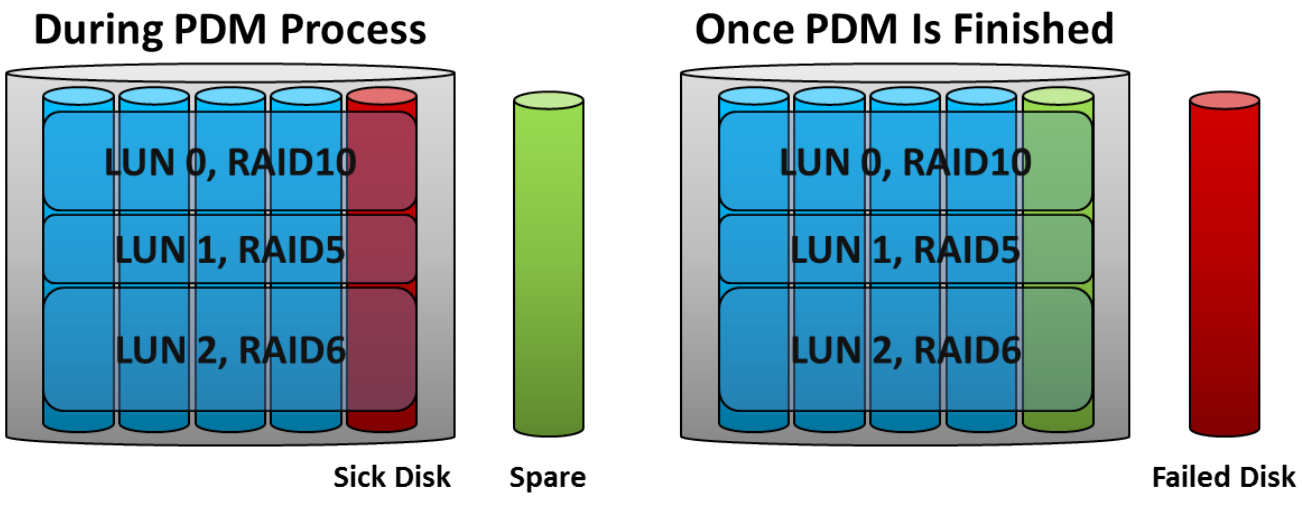
Today's massive capacity hard drives and stringent data availability requirements are driving the need for more robust data protection and failure resiliency. With hard drives exceeding 3TBs in capacity and even larger drives on the horizon, the impact of a single drive failing and the resulting intensive XOR rebuild has reached the point of no return. During the rebuild process of the first failed drive, the likelihood of a second drive having an error or failing completely increases exponentially with both the size of the hard drives and the total capacity of the logical drive.

With 2+TB hard drives, the amount of time required to completely rebuild a failed drive in a 12 - 15 drive RAID 5 logical drive is measured in hours or even days. The longer the rebuild takes the higher the risk to your data. In RAID 5, if you lose a second hard drive while the first one is still rebuilding, you lose 100% of your data. Even RAID 6 only allows a total of two drives to fail before losing all data in the RAID set.

How it Works

PDM is part of PROMISE's unique PerfectRAID™ technology. PerfectRAID™ is a suite of data protection and redundancy features built into every PROMISE RAID product. The PerfectRAID™ system monitors its hard drives for bad blocks, SMART events, and other hard drive reliability indicators. If a physical drive reaches a predetermined error threshold indicating it's failure is eminent, the data on the failing drive is copied directly to a hot-spare drive before the drive fails. Since the drive is replaced in the background before it fails, the chance of data loss is dramatically reduced.

Once the data is copied to the new drive, the failing drive is removed from the logical drive and the new drive is automatically incorporated into the affected logical drive resulting in zero downtime. PDM prevents the logical drive from reaching a critical unprotected state and impacting data access. PROMISE's WebPAM PRO family of storage management software, a web-based application, enables the administrator to manage the entire process simply and efficiently from any location via a web browser.



PDM: In Depth

The purpose of PDM is to remove the need for a time intensive RAID XOR drive rebuild altogether. Because it proactively monitors the health of all hard drives in the system, it reacts before a drive fails and migrates data to a known healthy drive. This migration is a straight disk to disk copy that is many times faster and far less RAID engine intensive than a full XOR rebuild. As a result, not only is it much faster to copy data from one drive to the next, but it has less impact on the performance of the RAID engine and the affected logical drive. PDM works by monitoring the following critical health indicators on every hard drive in the system:

1. Bad blocks: Number of blocks that have been re-assigned by the drive have exceeded a user configurable threshold.
2. SMART errors: A physical drive has reported a SMART error condition.
3. Other indicators: IO errors on a physical drive are encountered.

When any or all of these reach a predetermined threshold, the PDM process is automatically launched and the data is copied from the failing drive and onto the healthy drive in the background.

To find out how to bring the data protection power of PROMISE's unique Predictive Data Migration and PerfectRAID™ technologies to keep your data flowing and protected, please contact PROMISE Technology or your PROMISE authorized reseller today. Additionally, for more information please visit www.promise.com.

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