

3PAR: The Giant Killer

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Abstract: 3PAR has gone where the brave dare not go. They have gone after large Enterprise data centers competing directly with EMC, HDS, and IBM. 3PAR is fighting the good fight and finding success. If you haven't heard about 3PAR in a while it's because they have been so busy building their business.

The 3PAR InServ Storage Server is an Enterprise-class storage system that competes against the EMC DMX, Hitachi Universal Storage Platform and IBM DS8000 series. 3PAR is the giant-killer in this true David and Goliath story, with a powerful sling shot in its InServ storage system. A number of big Enterprise customers with mission-critical applications that would normally only work with a certain elite group of storage vendors have embraced the InServ Storage Server, entrusting 3PAR with a core part of their business and data.

3PAR had to prove that it could meet the stringent requirements of some of the toughest environments while battling fierce competitors. They had to show the highest levels of reliability and performance, and offer a comprehensive suite of features and functions, including differential snapshots and remote mirroring, to even be invited to the party. However, in order to win the opportunity, 3PAR had to bring to the table additional compelling value that its competitors did not.

Thin is In

3PAR is the pioneer in thin provisioning. Thin provisioning offers a simple solution to the common problem of stranded capacity. Thin provisioning is a storage array technology that allows users to safely allocate as much logical capacity to an application as needed over its lifetime. Meanwhile, physical capacity is drawn from a common pool of storage on an as-needed basis. That is, only when an application performs writes is physical capacity drawn from the storage pool. Additionally, physical capacity can be added to the storage pool non-disruptively at any time.

The economic impact of 3PAR thin provisioning can be substantial, saving literally thousands, tens of thousands, and potentially hundreds of thousands of dollars, depending on the scope of the environment. 3PAR thin provisioning is proof that they want to provide their customers solutions and not the biggest box they can. And that message is being heard loud and clear. One customer that ESG spoke with said that it is ridiculous to purchase capacity 18 months in advance, as many companies do, and then in some cases never use it. Another 3PAR customer had approximately 50 percent of their storage capacity stranded using EMC storage. Using 3PAR and its thin provisioning capability, they now have no stranded storage capacity.

Flexible Scalability

3PAR is a next generation storage system with a cache-coherent, cost-effective clustered storage architecture. As a result, its customers can add more InServ storage controllers in order to scale the system as needed. Up to eight InServ storage controllers can be added to a single cluster, which aggregates CPU, cache memory and bandwidth. Regardless of the number of InServ storage controllers that are in a cluster, it is still just one logical, automatically load balanced system, and adding additional controllers does not increase management complexity. This is an extremely compelling advantage over traditional storage systems since 3PAR customers can add more performance and power as needed. With traditional storage systems, you are essentially stuck because of their fixed architectures. If your performance requirements increase over a period of time, there is little you can do. On the other hand, 3PAR gives you plenty of headroom which don't have to pay for in advance, like you do with traditional systems. Instead, you can just add another InServ storage controller when it's needed.

In-the-Box Tiering

Not all data is created equal and the importance of that data can often change over time. SNIA claims that 68 percent of all data within storage systems has not been accessed for 90 days or more. If you have 10 TB of capacity this means that 6.8 TB worth of data is being stored on expensive tier-one storage but is not accessed on a regular basis. The capital costs can be staggering. Additionally, keeping dormant data on tier one storage creates a chain of

inefficiency. The additional capacity impacts overall application performance, increases backup windows, and increases administration costs.

It isn't enough to create different drive classes within your storage system. You need the ability to transparently convert data service levels on the fly. The same data can often be stored for one-fifth the cost later in its lifecycle than will be required at the time of initial provisioning, but traditional data migration complexity often keeps the customer from realizing that potential savings. 3PAR can transparently convert data online from one tier to another in just one command with its Dynamic Optimization. That is the difference between tiered storage and intelligent tiered storage. 3PAR refers to their technology as Integrated Data Lifecycle Management (iDLM). Based on policies or templates, as 3PAR calls them, system administrators can move data to pre-defined tiers of storage on creation and/or over time. For example, one 3PAR customer leverages these capabilities to transition databases, simply and non-disruptively, through the following lifecycle changes:

1. RAID 1 striped over 146 GB FC drives -- during early days of the database's life when it is massively written to (avoiding any RAID 5 write performance penalty)
2. RAID 5 striped over 146 GB FC drives - to lower the cost over the next period and freeing capacity for other work
3. RAID 5 striped over 500 GB Nearline drives -- once access rates decline substantially, to achieve the lowest online price/GB

Local and Remote Mirroring

3PAR is focused on Enterprise-class opportunities and have put a great deal of attention into providing advanced data protection features for their customers. Since 3PAR supports mission-critical environments, they provide local and remote replication software to their customers.

3PAR supports copy-on-write (CoW) snapshots. They leverage their thin provisioning technology to ensure that its snapshots do not use any additional capacity to store protection copies. Other solutions require a volume to be created for snapshot copies, and like primary volumes with traditional provisioning, they also require allocated but unused capacity. 3PAR snapshots do not require this and are extremely space efficient. 3PAR customers can create hundreds of snapshots with minimal impact on capacity.

Remote replication is also an important capability especially where mission-critical data is concerned. 3PAR supports two modes: synchronous and asynchronous periodic mode. Synchronous is used by companies that want to have every write copied at the local and remote sites simultaneously, ensuring no data loss at the secondary site in the event of a disaster. However, synchronous remote mirroring has distance limitations because of its real-time replication of data. The 3PAR Asynchronous Periodic Mode on the other hand provides an easy to use solution that has no distance limitations. One 3PAR customer uses the Asynchronous Periodic Mode software to replicate data between two data centers that are 5,000 miles apart.

3PAR considers its remote mirroring to be a competitive advantage over EMC, HDS and IBM, since its customers feel it provides a lower cost and easier to use solution. Additionally, the 3PAR remote mirroring software also leverages its thin provisioning technology. Again, this results in consuming less storage capacity at the remote site by storing only actual data and not empty blocks.

ESG's View

In many ways, 3PAR has had a more difficult job than the other storage system upstarts because they've had the toughest competition. 3PAR has won against Enterprise-class storage system solutions from formidable competitive vendors including EMC, HDS, HP, IBM and Sun. In order to do this, 3PAR has to provide significant value versus these leading vendors. At the core of its success has been the InServ Storage Server but 3PAR has also proved it can support global customers with the level of excellence required to play with the big boys. 3PAR has a track record of success that provides the greatest proof that the InServ provides scalable performance for enormous environments, reliability for the most mission-critical applications, and the core data management functions required to protect and recover data. It also offers advanced functionality such as thin provisioning, clustering and iDLM that delivers unique value over the competition. 3PAR is an excellent Enterprise-class storage solution and is gaining real momentum.