Storage Maps The Future of Digital Data

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The one consistent theme in the digital world is that growth is a constant. It is estimated that from 2009 to 2020, the size of the digital universe will have increased 44 fold; that is a 41 per cent increase in capacity every year. Storing, locating and extracting value from high volumes of data will become increasingly complex.

The fall out of the way data storage is currently handled is massive - the impact on the environment is one of these factors. Storage already consumes 40 per cent of datacenter power and it is predicted that within ten years the total energy consumed by storage solutions could increase to more than six times what it is today. Based on these predictions, storage could represent over 75 per cent of the energy consumed within the datacentre and if you consider that 80 per cent of data is never looked at again after three months, storage is a major! IT trigger for energy burn out.

Another fallout is cost and the added expense of managing growing volumes of data. The business critical nature of data is driving up storage management costs by 25 per cent per year[4], so in the long term it will become the number one cost within many datacentres. Therefore, it's becoming increasingly more important to align the value of data with the capabilities and cost of the storage it is stored on.

Looking forwards, the future of storage management must be simple, easily accessible, cost efficient, environmentally friendly and streamlined, so organizations can function and perform quicker and bet! ter.

Striving for nirvana

There are three essential elements that must be considered when formulating a storage strategy to meet growing data demands - the evolving function of the datacentre, business drivers, and the 'nirvana' storage solution.

Today's typical datacentre is migrating from a physical, static, and heterogeneous set-up, to a grid-based virtualized infrastructure to a cloud computing environment that enables self service, policy-based resource management, and capacity planning. Along the way, the storage solution must be able ! to support this style of datacentre, so it is critical that the storage system is dynamic enough to support the difficult to predict demands of these application environments through a tiered approach.

Reducing cost was at the top of the CIO's agenda yesterday, now business growth and profitability is. The storage strategy must fall in line with these objectives. So, regardless of an organisation's size, the storage solution must be able to scale to solve the larger, more complex business problems and it has to perform in real-time so organizations can react and make business decisions immediately. Likewise, the infrastructure has to be efficient so complex business problems can be effectively solved at a reduced cost and improved speed, and there must be data integrity built in to meet long-term business and regulatory compliancy.

Finally, there is the liberating act of creating a 'storage nirvana', should cost and incumbent infrastructure not be an object. For a CIO, this would probably include on-demand secure data access, application aware storage optimization, unlimited capacity, scalable performance, appliance-like rapid deployment, and integrated application, system and storage management. Although, this nirvana is a distance away, these ideas must be taken into consideration to guide organizations onto a path of accelerated performance, profitability and lower IT costs.

A pyramid strategy

To make the strategy a reality, companies must shift away from the traditional approach of managing islands of storage and move to an automated, tiered and unified storage infrastructure. By adopting a formula whereby certain data to be stored is assigned to certain storage pools, organizations will improve the price, performance, capacity and functionality of their storage infrastructure.

A typical tiered storage model has four tiers. Newly emerged, tier 0 uses flash memory storage, is extremely high performing and stores high value information that needs to be captured, analyzed and presented at high speed.

Primary storage, classified as tier 1, is based on fiber channel disk systems and should have high performanc! e, high availability with near zero-downtime and fast recovery to support customer-facing and revenue-based applications. Tier 2 storage should be managed on low cost high capacity disks, with the capability to manage broad business applications such as databases, backup, email, and file systems. Finally, tier 3, which is based on the more cost effective, energy efficient tape technology serves the purpose to store high volume archival data for regulatory purposes and doesn't require immediate access.

Leveraging economic prosperity

Leveraging upon a tiered storage environment has significant economic advantages. Research has shown that a single tiered storage environment has an average lifetime cost of $15,000 per terabyte; a dual tiered one of $8,000 per terabyte; and a four tiered storage structure, $4,000 per terabyte. With the majority of the data residing in the archival data tier 3, which is built on tapes, costs will naturally depreciate. Likewise, an automated systematic data-value mapping and distribution approach requires less administration and maintenance at the low end of the storage pyramid, thus reducing costs and freeing up staff time to focus on the mission critical data.

Such an approach to storage also reduces compliancy risk and improves business continuity as organizations will be able to more easily satisfy legal and audit requirements, which in turn, improves service levels. Ultimately, organizations will witness their performance improve as upgrades will become easier, stale data will be removed from production resources and there will be less disruption to the production environment.

With growth, performance and profitability high on the C-level agenda, storage management can play a significant role in helping organizations to achieve these objectives.

[1] IDC Digital Universe Study:! May 2010
[2] Merrill Lynch 2010
[3] IDC White Paper, Improving File System Storage Efficiency with Unified Storage: March 2009
[4] Jupiter Media Corporation and The StorageIO Group, Report to Congress on Server a! nd Data Energy Efficiency: August 2007
[5] Horizon Information Strategies, Tiered Storage Takes Center Stage: 2011