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Trends in information technology from the consultants at Digitask Consultants

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This issue's topic:
Storage Virtualization

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This issue is about how storage in most environments can be made more efficient both from a performance and management perspective.

Introduction

Data availability, integrity and storage have never been more important or complicated than in today's enterprise environments. We, as managers and users of the data, demand twenty-four hour, seven days-a-week access. In 2000, the world created three exabytes of new information, and this rate is expected to increase by 50% per year. Until recently, we had no choice but to store information directly attached to individual database or file servers. These were distributed around our companies. Because of this architecture, it was difficult to manage the storage, and we had little idea of how well our storage was used.

With the advent of heterogeneous Storage Area Networks (SANs), i.e., SANs composed of hardware from various manufacturers, and the fusion of SANs with Network Attached Storage (NAS) gateways we can start viewing our storage as a pool separate from the individual servers and a resource which can be shared.

What is Storage Virtualization?

Conceptually, storage virtualization collects all or pieces of SAN disks into a logical pool which is made available to servers. These pools can span individual disks, disk arrays and geographic locations and use the server applications as if the pools were directly attached devices. Since these devices are on a SAN, there is no need to rewire to configure or reconfigure these virtual devices.

Key learnings from the past couple of decades of managing traditional networks (Ethernet, SNA, TCP/IP, DECnet, IPX, etc.) have been mostly translated to the SAN. Therefore applying network terminology to a SAN is not a mistake or misnomer. Management is typically done from the SAN managers desk and does not require rewiring or physical access. A virtualized SAN environment allows the monitoring of usage, performance, capacity and growth as well as implementing the security aspects either at the host or storage device level.

Improving the TCO

The Total Cost of Ownership is dependent on many parameters. For example, the TCO will change if the utilization changes. In addition managment costs, reliability, etc. have a significant impact on TCO. In non-virtualized environments, the increment of growth is the physical disk device (now about 18 to 146 GB). This leads to the potential of wasted space. For example, if you need an extra 10 GB of storage you may not use between 18 and 136 GB of space. Since a virtualized storage device takes portions from many individual devices, the storage needed can be sized more closely. In fact, the typical non-virtualized environment utilized 50-60% of its storage capacity on average. A virtual environment can raise that utilization to 80-90%, saving money and improving performance.

How is performance improved? Take a database needing 300 GB of data storage. Typically, in a high performance environment this might be composed of five 72 GB disks that would be replicated (a total of 10 disks). This would allow five separate devices to write data to and as many as 10 devices to read data from. In a virtual array of disks, that is a pool of disks which has been carved up to appear as many devices, one of these virtual devices may contain portions of 100 (or more) physical devices. With such a structure the data transfer rates can be huge. The management issues and complexities regarding placement of data on specific devices is significantly reduced since the manager is no longer concerned with the physical entities.

Conclusion

It is difficult to present a complete picture of the advantages of storage virtualization in a one page newsletter. There are significant issues (initial purchase cost not being the least of the them) with implementing a virtualized environment. The technology is now able to work in hetrogeneous, multi-manufacturer environments and has the potential to reduce costs while allowing the enterprise to become more agile in how it responds to changing conditions. Digitask Consultants would be happy to asses your specific needs in a no-cost, no obligation meeting. Please call or e-mail our helpline, or make an appointment for us to discuss your situation.

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