ITMR

योगः कर्मसु कौशलम्

WHITE PAPER ON

Data Recovery Solutions

Prepared by **Mohammed Samiuddin**

Contents
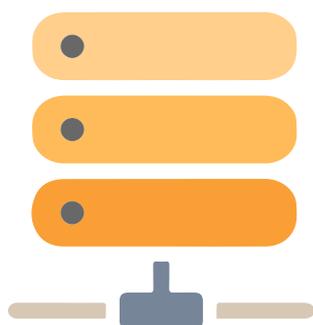
Introduction

In today's world, business transactions are faster and have a broader reach to more people in different countries than ever before. Business transaction indirectly means data. According to Gartner, data growth is the biggest challenge to Information Technology. Data growth has necessitated the need for data recovery and business continuity in the context of business. The volume of data that must be backed up and restored is growing at 60% to 70% per year. As the data volume grows day by day, the need for appropriate data recovery solutions becomes a prime importance. An excellent range of data backup and business continuity solutions have hit the market. This calls for an understanding of the solution space and HTC and its research division ITMR are working on this for a period of time.

Data is very sensitive for any organisation. The major challenge that organisations are facing is protecting the growing data from data obsolesce and availability apart from the data security. So companies are very cautious about protecting their data.

The organisations worldwide have evolved their data storage strategy and have stabilised themselves with an understanding of various data storage technologies such as Storage Area Network (SAN), Network Attached Storage (NAS), etc. In reality, there are chances for a storage device to fail; they have a fixed Mean Time to Repair (MTTR) and Mean Time Between Failure (MTBF). Regulatory requirements mandate that more information be retained for longer periods of time with on-line or intermediate near line repositories, or in long-term archives. So organisations are forced to have a more complicated information storage infrastructure, as well as greater security to protect stored data. Realising the value of data protection, organisations are willingly setting up data protection and recovery plans.

Introduction - Cont.

Organisations usually set up their data recovery objectives before developing an effective backup and recovery strategy. HTC has identified a range of backup and recovery strategies, which will enable organisations to select one easily based on their requirements. Data recovery objectives are defined in terms of:

Recovery Point Objective (RPO)

Recovery Point Objectives is driven by two key parameters. First is the number of transactions that can be lost. This can actually be business application transactions (such as a transaction-oriented database) or time units (such as hours). Second is the point in time from which it must be possible to recover data.

Recovery Time Objective (RTO)

The RTO defines how quickly the business function must be restored. RTO generally refers to the resumption of business function, and not necessarily the amount of time available to perform data recovery. The window for data recovery is sometimes called the data recovery window.

When the objective for data recovery is defined, next step for decision is the cost associated for selecting the data protection and recovery solution. Solutions for recovering complete systems and individual pieces of data are commonly separate products, each with its own maintenance, support, with different licensing costs. So, organisations must have a clear understanding of the storage technologies before selecting one.

Recent studies show a considerable increase in the number of organisations that implement data recovery solutions. Organisations can choose among numerous backup and recovery technologies that are available today, which range from traditional methodologies to leading-edge solutions.

Data Recovery Technologies

The protection and recovery solution will be based on the technology that will suit the organisation. These technologies generally fall into one of the following solution categories:

Traditional Data Recovery Technology

This is the technology that most of the organisations use. It typically consists of one or more types of backup servers and backup clients. Backup clients send data over the LAN to the backup media server, which writes the backup objects to a storage. The master server maintains the catalog of backup objects. It also manages the backup schedules and the media.

Some of the core solutions available in the market are IBM Tivoli Storage Manager (TSM), Symantec NetBackup (NBU), EMC Legato NetWorker, CommVault Galaxy, and HP Data Protector. The core backup and recovery technologies such as NetBackup, TSM, and NetWorker can be relatively complex. They often require significant expertise and skill to manage. Further complicating, backup and recovery must operate in the "background" without impacting normal business operations or users. Some of the recovery technologies are:

- Block-level backup

- Removable media management

- Open-file backup

- LAN-free backup

- Serverless or server-free backup

- Point-in-time off-host backup (mirroring)

- File-system data snapshots

- Backup to disk

- Data replication

- Centralised backup administration

- Encryption

- Bare metal restore

- Workstation backup

Data Recovery Technologies - Cont.

Storage-based Technology

This technology utilises the functions that are available with the storage system to create additional copies of data. Storage based technology is generally a homogeneous technology requiring similar storage systems (although virtualisation is beginning to change this requirement). Many of the storage vendors support only native backup and recovery technologies in their storage systems. The few functionalities of storage based technology is full-copy data snapshot, pointer-based data snapshot, and synchronous and asynchronous replicated copies. The key drawback of storage-based solution is that they are tied to the vendor (and often a specific model) of storage system. This makes it difficult, if not impossible to deploy a flexible multivendor storage strategy.

Emerging Data Recovery Technology

The leading edge solutions ensure there is no transaction loss encountered by the organisation. However, the implementation of these technologies depend on the interest and financial ability of the organisations. Continuous Data Protection (CDP) is the current emerging data recovery technology.

Continuous Data Protection (CDP)

Continuous Data Protection (CDP), also called continuous backup, is a storage system in which all the data in an enterprise is backed up whenever any change is made. In effect, CDP creates an electronic journal of complete storage snapshots, one storage snapshot for every instant in time that data modification occurs. All the Input/Output (I/O) operations of the application is tracked so that no transaction is lost. A CDP system with disk storage offers data recovery in few seconds, which takes much less time than tape backups or archives. Installation of CDP hardware and programming is straightforward and simple and does not put existing data at risk.

Conclusion

Data recovery is crucial than ever. Data Recovery capabilities are essential to run an organisation efficiently. Whether to manage backup policy by own or outsource it to a technical consultant, there are new backup solutions that are flexible, easy to manage, and available in the market today.

About the Author

Mohammed Samiuddin spearheads the branding aspects & managing client relationships of ITMR. His passion includes speaking on cyber security threats, data security practices and new technological areas.

Reference

Data Recovery

http://www.drivesaversdatarecovery.com/wp-content/uploads/Data_Recovery_WP.pdf

Data Recovery Technologies

http://www.brocade.com/downloads/documents/white_papers/DataProtection_WP_00.pdf
http://storusint.com/pdf/Data_Recovery_Choosing_the_Right_Technologies.pdf

About ITMR

Institute of Technology, Management and Research (ITMR), a division of Mamta Trust, is a premier institute that provides world class professional training programs for the corporates and academic sector. ITMR's motto 'yogah karmasu kausalam' means 'Yoga is excellence in action' and is the foundation of its vision to evolve into a "CENTRE OF EMINENCE" to offer cutting edge vocational skills and mold professionals to become business and technical domain experts. ITMR's professional and corporate training programs include several cutting edge to help working professionals acquire domain expertise and meet the current and emerging challenges in the IT world.

Our flagship training program on Cyber security has PDCIL is a top of the class cyber security program in the country training top officials in the Police departments, Indian and International Banks, Military, Legal fraternity, Fortune 100 Global companies and Blue Chip India IT companies.

ITMR also offers research programs on Cyber Security (network security monitoring and access products), in association with Secure IQ, a leading provider of network security software products with headquarters in Fairfax, Virginia, USA and operations and development in Chennai, India.

ITMR
योगः कर्मसु कौशलम्

Institute of Technology Management & Research

(Division of Mamta Trust)

2/850, Mugaliwakkam Road, Mugaliwakkam, Chennai - 600 125, Tamil Nadu, INDIA.
Admin Office: HTC Towers, No.41, GST Road, Guindy, Chennai – 600 032,
Tamil Nadu, INDIA. Phone: +91 44 4345 3500 / +91 44 4345 3349
Contact for More Information: training@htcitmr.ac.in