NetApp™
Go further, faster

Application Solution

NetApp Data Management for Decision Support Systems

Superior availability and data protection, higher storage utilization, and modular scaling for your data warehouse environment

KEY BENEFITS

Proven availability
Get up to 99.999%[1] measured uptime for around-the-clock application availability.

Fast, space-efficient backup and recovery
Back up or recover your data warehouse in a fraction of the time.

Simplified DR
Protect your decision support capability at a cost you can afford.

Zero-space virtual copies
NetApp® clones only consume storage as changes are made.

Storage utilization up to 90%
Decrease the raw capacity needed for your decision support storage.

Modular scalability
Grow performance and capacity as needed

THE CHALLENGE

Over the past five years, the operational importance of decision support systems has increased dramatically and the average data warehouse size has grown by 10 times[2]. As a result, requirements for manageability, availability, and disaster recovery are reaching the same levels as for production database systems. In addition to focusing on your data warehouse capacity, scalability, and performance needs—which are daunting enough by themselves—you now have to provide 24x7x365 availability, reduce the time needed for maintenance, and protect your systems against disaster, all without breaking your budget.

With the typical data warehouse doubling in size every six to nine months, you need to squeeze the highest possible utilization from storage and plan your capacity additions carefully. The number of data sources feeding data warehouses is growing rapidly, so you need efficient solutions that help undo a batch load after an error has been discovered.

THE SOLUTION

NetApp storage helps you meet the growing challenges of decision support systems
Our innovative storage solutions deliver the high levels of reliability, availability, and serviceability that today's decision support systems demand. With NetApp, you can perform frequent, space-efficient backups of your data warehouses and recover data in minutes.

Efficient, low-cost replication makes disaster recovery economically viable, and our unique cloning technologies eliminate the need for additional physical copies for data marts, development and test, or other functions. Because of NetApp's superior storage efficiency, you can significantly raise your overall storage utilization while delivering the flexibility, scalability, and performance you need for continued growth.

[1] http://media.netapp.com/documents/ar1056.pdf
[2] IDC Storage Workloads Forecast and Analysis, 2005–2010

"Before, if we had to restore data from the previous night's batch process, we'd have to run the 12-hour batch process all over again. With NetApp's replication technology, we already have a copy of the previous night's batch process at our contingency site, so we don't have to rerun the entire batch process before beginning to recover data."

Joanna Wu
Systems Specialist, Union Bank of California

Reliability, availability, and serviceability are essential
If a hardware failure or software corruption occurred, it used to be possible to rebuild a data warehouse from source data. Given both the operational complexities and large size of most repositories, this is no longer a practical alternative. Reliability, availability, and serviceability (RAS), which were once secondary considerations, are now a critical element of your decision support systems.

NetApp storage systems are optimized to deliver the highest levels of reliability:

- NetApp RAID-DP® protects against double disk failures at a fraction of the cost of mirroring.
- Active-active clusters eliminate single points of failure without leaving expensive hardware sitting idle, delivering up to 99.999% uptime[3].
- Maintenance and management operations can be performed without interrupting data access.

Our innovative software for backup, restore, and disaster recovery (DR) further enhances overall data availability.

Turbo-charge your data protection
Your data warehouse may have grown too big to be backed up and restored in a timely fashion using tape-based processes. Only full, disk-based copies are fast enough to give you the level of data protection you need in the time window you have available. NetApp provides two levels of disk-based backup protection plus disaster recovery:

- NetApp Snapshot™ copies create fast, space-efficient, point-in-time copies of your data.
- Space-efficient, disk-to-disk backups are enabled with NetApp SnapVault® software.
- NetApp SnapMirror® software provides cost-effective replication for DR.

Ensure ETL completion with NetApp Snapshot and SnapRestore
Your extract, transform, and load (ETL) operations can take hours to complete and, if an error occurs, you can't afford to restart the entire process. With NetApp Snapshot copies you can create backups at regular intervals during the ETL process. If the process fails, SnapRestore provides an easy way to recover data from a Snapshot copy, saving time and increasing the likelihood that you'll meet your operational objectives. A final Snapshot copy at ETL completion provides a consistent image of each night's data load that can be backed up or replicated to secondary storage.

Rapidly vault to secondary storage
For disk-to-disk backup, NetApp SnapVault software can perform incremental backups at rates of up to 8TB/hour, enabling even the largest data warehouses to be backed up in a very short time. SnapVault efficiently transfers and stores only blocks that have changed since the last backup, conserving network bandwidth, reducing the time necessary for backup to complete, and saving substantial storage space so you can keep more backups online. Data operations can continue as necessary while backups are running.

[3]http://media.netapp.com/documents/ar1056.pdf

Disaster recovery

NetApp SnapMirror allows you to asynchronously replicate your data warehouse to a secondary data center for disaster recovery. Like SnapVault, SnapMirror transfers only the blocks that have changed since the last replication cycle for efficiency.

Unlike most other replication solutions, SnapMirror allows you to use different configurations for your source and target storage systems. For instance, you might choose a clustered storage system with Fibre Channel disks at your primary site for optimum performance and availability and a standalone storage system with SATA disks at the secondary site to reduce costs.

Expensive assets never sit idle

With NetApp SnapVault and SnapMirror software, your secondary storage doesn't just sit idle waiting for a restore or failover to occur. You can actively use that storage for a variety of activities such as reporting, data extraction, or development and test without putting your data at risk.

SnapManager tools make it simple

Lack of storage integration with your decision support system can create unnecessary headaches. NetApp SnapManager® tools for Oracle® and Microsoft® SQL Server® integrate with existing database tools and make it easy to perform backup, restore, replication, and cloning operations. Policy-based automation enables your data warehouse to be always properly protected. Storage administrators can even delegate storage-related tasks to database administrators so they can meet many of their storage requirements without delay.

Zero-space virtual copies

In any decision support system, you invariably need copies of some or all of your data for individual data marts, development and test, and more. NetApp FlexClone® technology lets you make multiple, instant virtual copies of your data with almost no storage overhead. Because only changes that are made to the clone are stored, the additional storage requirement is incremental. Compare that to the 2x storage requirement of making a full copy—not to mention the hours it takes for a full copy to complete.

Most development and test environments require test copies of the data warehouse for updating ETL processes or designing new business intelligence applications. Since part or all of your data warehouse can be instantly cloned without requiring additional storage space at the time of creation, you can create and allocate many individual, writable copies of your data. Activities that once had to be performed sequentially because of storage limitations can now be done in parallel, increasing the speed of testing and deploying new applications.

Increase storage utilization

With traditional storage solutions, you begin by forecasting how much storage you'll need—a process that's notoriously prone to error—and make your storage purchases. Then you carve that storage into separate, fixed volumes and track utilization. Inevitably, some volumes are underutilized while others are overutilized, so you have to go through a painful and complex process of reallocating space.

CHALLENGE	NETAPP SOLUTION
Data warehouse availability	NetApp storage protects availability with innovative hardware and software solutions that keep your data accessible without the expense of traditional data warehouse storage solutions.
Backup and restore take too long	NetApp Snapshot and SnapVault disk-based solutions let you back up and restore faster than tape-based solutions.
DR is complex and expensive	NetApp SnapMirror simplifies DR and minimizes costs. Identical source and target storage isn't required.
Expensive assets are underutilized	Utilize your SnapVault or SnapMirror storage for dev/test, additional queries, or other functions that require a current or historical data copy.
Reduce impact of ETL failures	Regular Snapshot copies during ETL allow you to recover data using SnapRestore rather than starting over.
Full copies required for dev/test and other functions	Using NetApp FlexClone you can make virtual copies of all or part of your data set in minutes with only incremental space required as changes are made.
Creating data marts requires significant time and storage	NetApp FlexClone allows you to rapidly clone the data needed for a data mart using a fraction of the space.
Query against multiple points in time	Combining NetApp Snapshot and FlexClone you can create a writable view of your data warehouse at any point in time.
Monolithic storage solutions	NetApp storage provides a modular design that enables you to scale capacity and/or performance as needed.
Minimize production impact	NetApp SnapMirror and FlexClone technologies allow you to isolate development and test processes, minimizing impact to production systems.

With NetApp flexible volumes (FlexVol® volumes), storage volumes are not tied to physical storage, so you manage data, not disks:

- Provisioning is fast and simple.
- All volumes are immediately distributed across a large number of spindles, so hot spots are eliminated and performance is enhanced.
- You can grow or shrink volumes as necessary without disrupting data access.

FlexVol lets you achieve higher utilization rates which translates into substantial decreases in the total amount of storage you need to get the job done.

Flexible scaling of performance and capacity

Many data warehouse storage systems offer a monolithic solution in which you buy everything upfront. With NetApp, our modular storage system designs make it easier to architect a flexible, scalable storage environment in which you buy the performance and capacity you need today and scale as necessary to accommodate growth. Bandwidth scales from 2GB/sec to 32GB/sec and usable capacity can scale from 15TB to 4 petabytes to meet your needs far into the future[4].

[4]http://www.netapp.com/us/library/technical-reports/tr-3760.html

NetApp creates innovative storage and data management solutions that accelerate business breakthroughs and deliver outstanding cost efficiency. Discover our passion for helping companies around the world go further, faster at www.netapp.com.

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