



ARCHITECT NETWORK

VERITAS NETBACKUP 5.0

November 4, 2003

TABLE OF CONTENTS

Introduction _____ 3

Optimizing the Data Protection Environment _____ 3

The NetBackup 5.0 Advanced Client _____ 3

 Advanced Client Advisor _____ 4

Improving the Recovery Time Objective _____ 4

Synthetic Backup _____ 5

Optimizing the Backup and Recovery Process _____ 6

Disk Staging _____ 6

Conclusion _____ 7

Introduction

After many years of relatively pedestrian change enterprise storage environments have been experiencing mind-boggling rates of growth and innovation. These advances have spurred a corresponding revolution in data protection technologies.

Heightened end-user awareness of recoverability issues, and extraordinary growth in deployed storage capacity, are creating new challenges for storage administrators tasked with protecting data throughout the enterprise. Once adequate backup windows are now proving insufficient to accommodate the expanding volume of application data. And increasingly stringent application recovery time objectives (RTO) are putting pressure on existing data recovery procedures. Charting a path to a new data protection strategy in the face of a multitude of backup and recovery options - some specific to individual applications, some widely applicable to different types of storage, and all with slightly different recovery characteristics – is an enormous challenge.

VERITAS NetBackup 5.0 gives storage administrators the tools needed to manage the ever-changing backup and recovery needs of enterprise data. With a new, elegant, and simple to configure client, NetBackup 5.0 provides a portal to advanced backup and recovery solutions, along with an advisor tool to simplify selection of backup strategies. NetBackup 5.0 leverages the emerging price parity between disk and tape to provide sophisticated staging, streaming, and multiplexing options that speed the backup and recovery process and maximize the use of available resources. A new class of backup is available to address the continual challenges of network bandwidth, host application impact, and, most importantly, ever tightening application RTOs.

Optimizing the Data Protection Environment

Storage managers face a dizzying array of options when choosing how best to provide data protection for enterprise applications. FlashBackup, FlashSnap, File System checkpoints, Instant Recovery Option, Server-Free Agent, Array Integration Options, Block-Level Incremental Backups (BLIB), and replicated data copies, along with a host of other solutions, each provide powerful backup capabilities. These approaches are, however, invariably uncoordinated and often difficult to deploy, diminishing their value to the administrator.

Determining which backup solution, of the many available, will best address a specific environmental challenge is frequently impossible. Faced with a requirement to reduce the application impact of a backup, minimize network traffic, utilize special backup methods or hardware, or speed recovery processing administrators are often left without a clear and concise means of determining the best alternative. Confusing licensing and configuration options further compound the problem.

The NetBackup 5.0 Advanced Client

VERITAS NetBackup 5.0 resolves the confusion of backup options by packaging all available alternatives in a single offering. The new NetBackup 5.0 Advanced Client significantly simplifies pricing and licensing providing a single license, single price, for all advanced backup and recovery technologies.

Each snapshot backup option, including specific database backups that use the options, can now be configured and managed from the Advanced Client. Close integration with the VERITAS File System, VERITAS Volume Manager, and VERITAS SanPoint Control allows the new NetBackup client to configure file system checkpoints, FlashBackup for UNIX and Windows, and mirrored backup break-offs, as well as options for storage-array specific solutions such as EMC TimeFinder and Hitachi Data Systems ShadowImage. All from a single interface.

Setting Policy Attributes via GUI

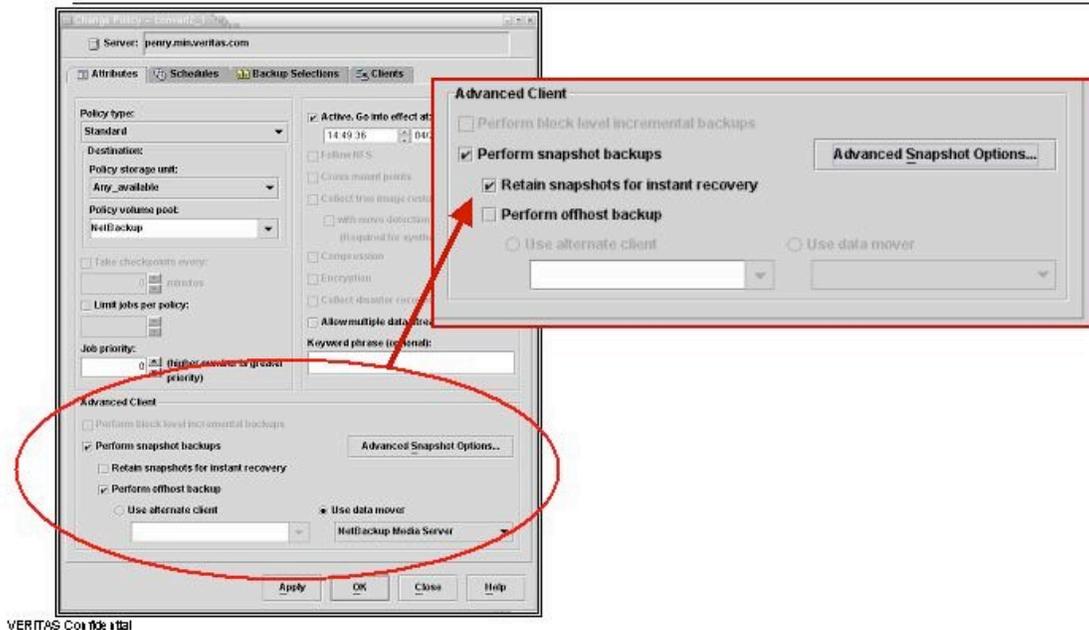


Figure 1. Installing the Advanced Client key allows all snapshot options to be configured through the client interface.

Advanced Client Advisor

Knowing exactly which advanced backup and recovery options to purchase can still be intimidating for the storage administrator. VERITAS NetBackup 5.0 addresses this problem with the Advanced Client Advisor.

The Advanced Client Advisor is a sophisticated html-based tool that guides the user through a series of questions about the specifics of the storage environment. The Advisor - installed independently of NetBackup and not requiring a web server to run – suggests the most appropriate backup and recovery solution based on user feedback. Each solution offered is accompanied by an explanation of the advantages of the chosen approach and specific details about how it applies to the user's configuration. Proposing multiple scenarios to the client advisor allows the user to assess the impact of selecting different backup and recovery options.

Improving the Recovery Time Objective

An enterprise application's RTO indicates the impact of unanticipated application downtime on business operations. The closer the RTO is to zero the greater the reliance of the business on the application.

For storage administrators, the RTO sets the absolute time limit in which application data must be restored after an outage. As the volume of application data escalates and organizations become increasingly reliant on technology-based business systems administrators are tasked with finding faster methods of recovering from unexpected outages.

Restoring from a full image of the application data offers the fastest backup-based method of recovering lost data. However, each time a full backup is run it imposes a heavy burden on the business application. For mission-critical business systems frequent full backups may not be a feasible option.

Incremental backups - backups that copy only changed data rather than the entire data set - have a more tolerable impact on daily application operations, but they also require a lengthy restore process. Recovering from an incremental backup involves restoring the most recent full backup, followed sequentially by every incremental image made since the full copy. The process is time consuming and error-prone.

Synthetic Backup

VERITAS NetBackup 5.0 provides a new class of backup – the synthetic backup – that delivers the fast recovery of a full backup with the reduced application impact of an incremental.

The synthetic backup process consolidates existing full and incremental copies to create a new full backup image. This synthetically generated image can then be used to recover application data as if it were a full backup. The synthetic backup is created at the NetBackup media server without any additional transfers of data between the media server and the NetBackup client.

Understanding how synthetic backups work can best be demonstrated using an example. Consider a client with 100 GB of data and an RTO that restricts the amount of time taken by the restore process to three tape images. To satisfy the data protection demands of this application administrators must schedule incremental backups daily, and a full backup every third day. This configuration provides a worst-case restore scenario of three tape images. However, such a configuration requires transporting 100 GB of data over the network once every three days, placing a significant load on the network infrastructure. The full backup also interrupts the business application each time it is run.

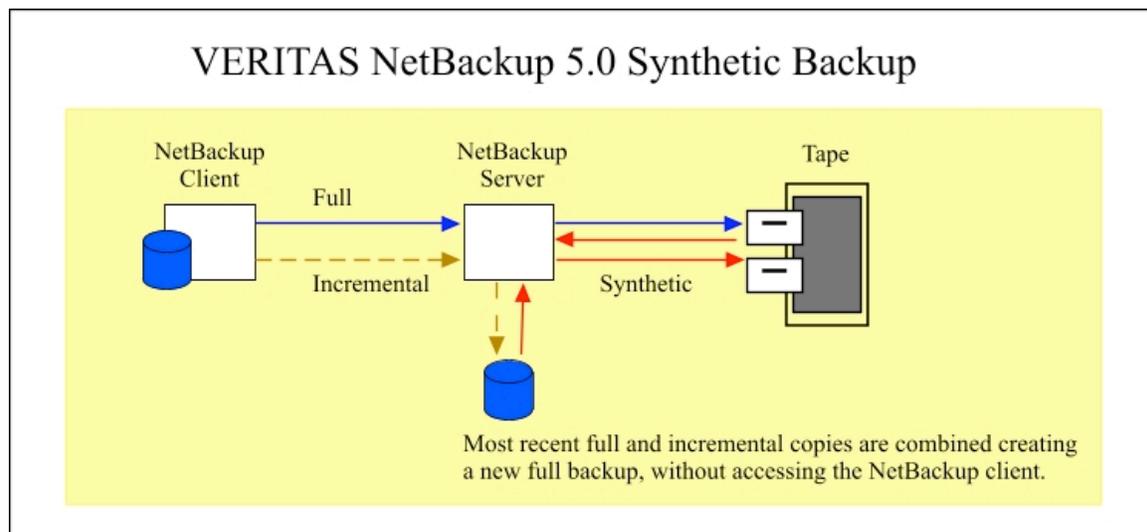


Figure 2. NetBackup 5.0 Synthetic backup example.

By replacing the scheduled full backup with a synthetic, NetBackup 5.0 is able to provide the same level of data protection without the periodic 100 GB load on the network and interruption to application processing. The synthetic backup combines the last full image with the three most recent incrementals, generating a new full backup copy. This copy is then used as the base for the next synthetic backup process. Recovery processing uses the synthetic backup image, just like a full backup copy, to restore application data.

The process of combining synthetically generated full backups with more recent incrementals can continue indefinitely, however a periodic refresh of the full backup from the client – for example, once every three months – may provide the storage administrator with additional peace of mind. The synthetic backup process can also be applied to cumulative incremental backups.

Synthetic backups support tape, disk, and combinations of tape and disk, giving the administrator the flexibility to optimize the backup and recovery process. Writing full backups to tape and incremental copies to disk, for example, allows for fast recovery and optimized tape usage.

Optimizing the Backup and Recovery Process

Multiplexing optimizes the use of a tape drive by synchronizing multiple backup processes and streaming the output to tape. The continuous rate of transfer enables the tape hardware to perform uninterrupted writes at the maximum possible throughput of the drive. The multiplexing process makes the most efficient use of tape media and minimizes wear and tear on the drive hardware.

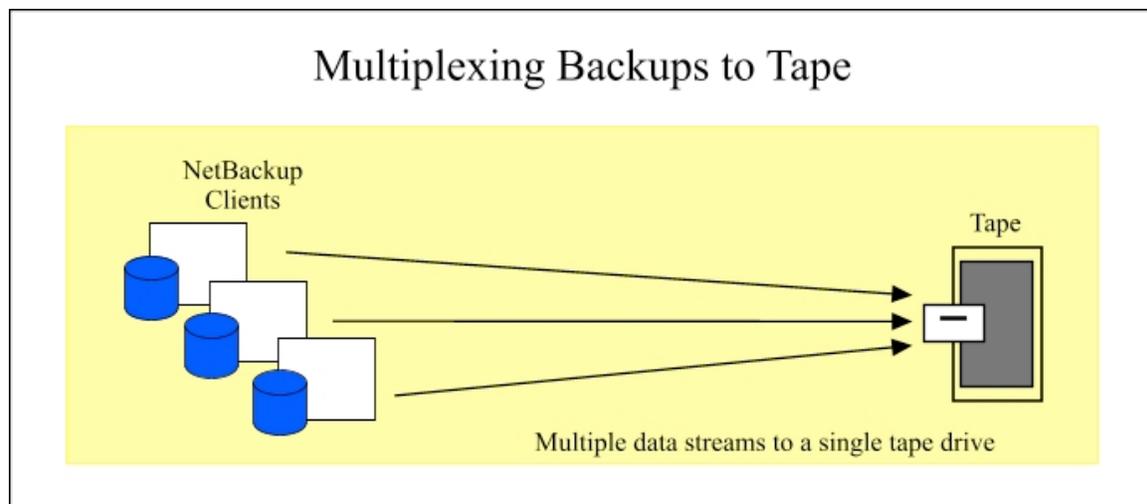


Figure 3. NetBackup multiplexing.

Ongoing hardware improvements are making it increasingly difficult to guarantee tape streaming. Faster tape drives require a faster data transfer rate and this can only be achieved by providing more data. Adding more NetBackup clients to a multiplexing configuration will boost the data transfer rate, but it also has ramifications for data recovery that must be carefully considered.

As more NetBackup clients share the same set of tape media, restore processing must spend more time determining what data is applicable to a recovery and what is irrelevant. This adds overhead to the restore process. Changes to media sharing must also be reflected in disaster recovery planning and offsite vaulting strategies. If the disaster recovery plans for two applications involve different recovery sites, but they are multiplexed to the same tape, vaulting the backup to a single location will create problems.

Disk Staging

VERITAS NetBackup 5.0 addresses the challenge of maintaining tape drive streaming by staging multiple backups to disk. Clients specify a disk staging storage unit (DSSU) as a backup destination, and NetBackup writes data to the disk as if it were a tape unit. The administrator configures the DSSU with a final storage unit (FSU) destination – a disk, tape, VERITAS storage unit group, or any available storage unit – and a time when the NetBackup server will offload DSSU contents to the FSU.

Specifying tape as the FSU allows backup data to be written directly from the DSSU to the tape drive at transfer rates that guarantee streaming. In addition, NetBackup clients previously exempt from multiplexing, because they were on slow, or poor performing, networks, can be optimized by staging their backups first to disk.

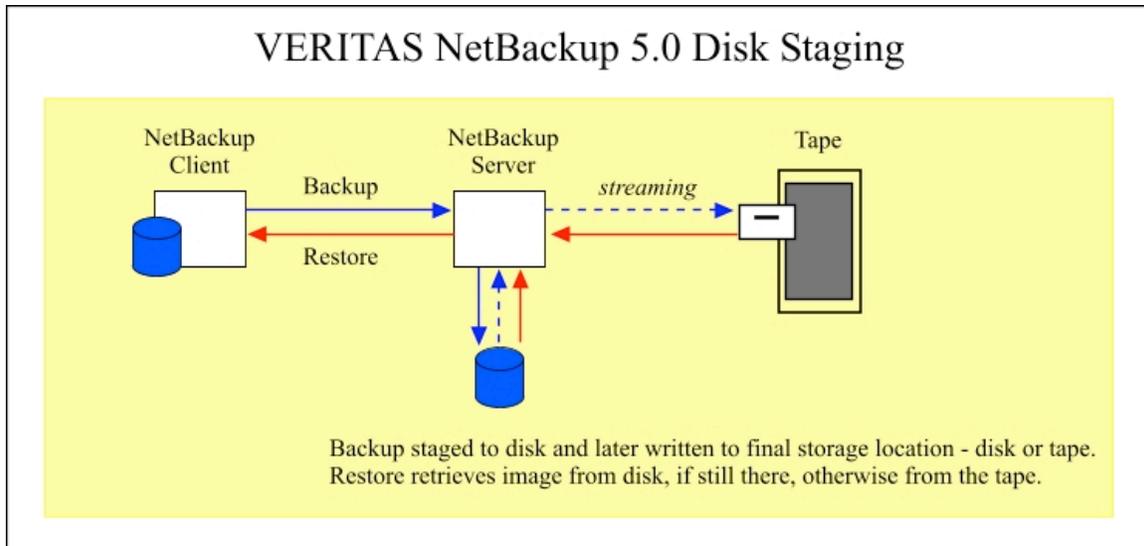


Figure 4. NetBackup 5.0 disk staging.

The NetBackup server automates movement of backup images between the DSSU and FSU, eliminating the need for client or administrator intervention. Images are not deleted from the DSSU until the space they occupy is required by another backup process. This allows a recovery to access images directly from the DSSU during a restore. If the backup image is no longer on the DSSU, the NetBackup server will retrieve the data from the FSU and continue the restore process.

Conclusion

VERITAS NetBackup 5.0 significantly simplifies backup and recovery processing, helping administrators create a coherent and responsive data protection strategy that incorporates state-of-the-art advances in storage technology. With new features that leverage the latest developments in high-speed tape devices and low cost storage, along with streamlined pricing and licensing, VERITAS has proven, once again, that NetBackup is the preeminent data protection package for today's increasingly complex enterprise storage environments.



VERITAS Software Corporation

Corporate Headquarters
350 Ellis Street
Mountain View, CA 94043
650-527-8000 or 866-837-4827

For additional information about VERITAS Software, its products, VERITAS Architect Network, or the location of an office near you, please call our corporate headquarters or visit our Web site at www.veritas.com.