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Symantec NetBackup™ Snapshots, Continuous Data Protection, and Replication

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Overview

Now that more and more data is being backed up to disk, there is a fundamental change occurring in the way backup takes place. With random access to disk now a possibility, technologies like snapshots, continuous data protection and replication allow for a much more finite control over backup and recovery with less impact. These technologies fundamentally change the process of doing backups.

Snapshots

There are several ways to do snapshots with NetBackup. The key benefit is that snapshots are managed in the same NetBackup policy, catalog and schedule interface as tape or any other type of streaming backup. Having NetBackup be the central location for all of this regardless of the type of snapshot technology used, makes it much easier to control and manage the data protection process.

Disk Array-Based Snapshots

If the data being protected resides on an external disk enclosure array, you can use NetBackup to control and manage the snapshot engine that the array has built into it. Examples of this include Hitachi ShadowImage™, EMC TimeFinder™ or SnapView™, IBM FlashCopy™, or HP EVA Snapclone™.

While the hardware array has built-in snapshots they must be controlled by software that is installed on the hosts that have access to the disks on the external device. Examples of this include EMC Solutions Enabler™ (SYMCLI/SYMAPI) or Navisphere™ Secure CLI, HP Command View™ (with Storage System Scripting Utility, SSSU) or the IBM DS CLITM.

Normally the snapshots taken on these arrays would be executed by software packages that each disk company provides with users manually executing the commands or scripting them. Some of the companies have come out with some basic schedule and policy engines for controlling their software packages to address this. But what happens if you have more than one storage array vendor? Or a very large number of arrays? By using NetBackup Snapshot Client there no longer needs to be scripts or additional software to take the snapshots. All the benefits of using the hardware-based snapshots are maintained while still having central control from NetBackup. In addition, NetBackup retains the knowledge of where the snapshot data came from, even it is backed up off host.

Software-Based Snapshots

External disk arrays are servers bundled with software and disk devices. So when snapshots take place they are being performed by the servers and software. Rather than having a snapshot engine for each array that is proprietary, NetBackup has an independent snapshot engine in Symantec NetBackup™ RealTime that will allow for any attached disk devices to take snapshots. In addition, this data can be replicated or even protected with continuous data protection.

Another software-based snapshot technology would be the kind found in file systems such as Microsoft's Volume Shadow Copy Service™ (VSS) or Veritas™ File System FlashSnap. Both of these products abstract the hardware layer so that NetBackup can take a snapshot by calling VSS or FlashSnap in the same way regardless of what type of disk is underneath. For true storage hardware independence this is one of the best options.

Continuous Data Protection

Disk storage has now enabled one of the best forms of backup: continuous data protection (CDP). CDP tracks all the changes that a disk makes and sends those changes to be stored in a journal on another disk. When it comes time to recover, it simply takes the original data which was copied or mirrored before the journal began and applies any journal entries up to the point in time that was chosen for recovery. NetBackup RealTime does this by presenting virtual disk volumes that are accessed much like snapshots or replication are already. However, with CDP, since there is a journal of the changes, you get the history to roll back which is not possible with replication alone. Therefore, CDP can be used as a single line of protection unlike replication, which often has to be used in combination with another form of protection since any corruption of the data would also be replicated without the ability to rollback.

Since CDP, like replication, offers virtual disk volumes for recovery it can be used for many other things besides backup. Anytime a copy of production data is needed it can be served up from a NetBackup RealTime server. Examples of this include testing application patches or new version releases, doing testing or development off of production data, or e-discovery. NetBackup RealTime also offers the ability to access more virtual disk space than there is physical space for. This is due to the fact that each volume is not 100 percent different, only the changes are physically stored between each virtual disk volume. This means the cost of disk protection is much lower than snapshots or replication.

Replication

NetBackup RealTime 7 provides live block level asynchronous replication with NetBackup. Replication in NetBackup RealTime is similar to array-based replication that is done with a server included in the disk enclosure but with NetBackup RealTime it allows for any storage to be protected and any other storage to be used to store the protected data. This makes multi-tiering possible so that less expensive disk can be used for the replicated data than the protected data. This is often not possible when replicating between hardware arrays because those arrays must be identical. Another benefit to replicating with NetBackup RealTime is that the data is completely copied off of the physical disk array and maintained with a timeline so logical or physical corruption can be “rolled back”. Many snapshot and replication features still reside within the same physical enclosure. The best way to get started with NetBackup RealTime 7 replication is to try it for protecting the NetBackup catalog which is **free of charge** with NetBackup. In fact, the NetBackup RealTime DVDs will ship with NetBackup 7.

Disaster Recovery

Often the purpose of replication is to guarantee disaster recovery in case a whole building or data center is not accessible. This is accomplished by a number of ways: shipping tapes on a truck, replicating data via a storage array and now even cloud storage. One of the fundamental problems with disaster recovery (DR) is that having a central plan to manage and understand everything can be difficult when using multiple methods and technologies to do it. With NetBackup's historical tape support with features like NetBackup Vault Option and now NetBackup RealTime replication, DR can be centrally managed from one location regardless of the method being used. NetBackup RealTime offers the ability to do failover and failback between NetBackup RealTime servers at various locations. This allows for protection to continue working even when moving to another location. The failover can be controlled automatically using Veritas Cluster Server™ (VCS) or manually in the NetBackup RealTime web interface.

True Disk Recovery

One thing that is often overlooked when thinking of replication is that it is a very different type of recovery process. This is because the replicated data can be accessed directly as a virtual read/writeable disk drive. Unlike deduplicated disk or tape that needs to be streamed back to another location before being accessed (e.g., you can't run Oracle off of a tape drive or Exchange off of a deduplicated storage appliance), the NetBackup RealTime replicated data can be mounted in a few seconds just like array-based replication or snapshots. Changes can be made to the disk and copied back to the original location once it is accessible again. This means that recovery time is no longer effected by the size of data being recovered – a few gigabytes or a few terabytes can be mounted for recovery at the same time.

Summary

NetBackup provides the flexibility to integrate with 3rd party storage and software vendors or to leverage software technology from Symantec. No matter what combination of disk technology is in use, NetBackup provides one management platform for data protection across tape, snapshots, CDP, and replication.

About Symantec

Symantec is a global leader in providing security, storage and systems management solutions to help consumers and organizations secure and manage their information-driven world. Our software and services protect against more risks at more points, more completely and efficiently, enabling confidence wherever information is used or stored.