

ONStor Snapshot Technology: Data protection for point in time recovery

Introduction

One of the most common requests to an IT department is for the recovery of lost, deleted, corrupted or overwritten files. Traditionally, this is accomplished by going to the backup tapes and restoring the data set. But this can take hours, days, even weeks and in today's business environment, that is not an acceptable situation. The use of snapshot technology, which provides point in time copies of the file system, allows individual files or even complete file systems to be recovered almost instantaneously. With an effective automatic snapshot policy in place: the business remains protected from accidental or malicious loss; backups can be performed regardless of the "backup window"; users are able to promptly retrieve their own lost data; and the IT staff can focus on more productive work.

How it works

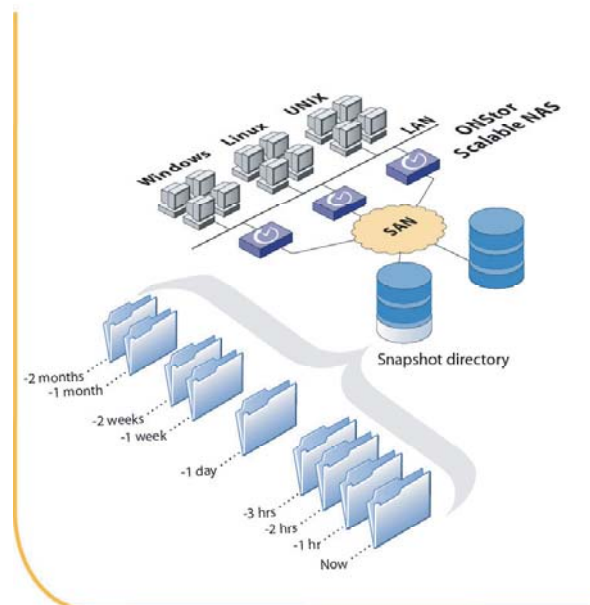
The snapshot technology works by retaining a read only, block level image of the complete file system and creating new blocks only when data is changed. Because of this, the snapshot file is kept very small relative to the data set, even though there can be many point in time copies held at any one time. Unlike competitive offerings, the advanced ONStor implementation can dynamically allocate storage on demand and does not need to reserve a volume purely for snapshots.

The first time a snapshot is taken, a complete read only image of the file system is taken. As changes are made to the file system, a separate block level read/write record is kept of the changes using copy-on-write technology. When the next snapshot is taken, data blocks changed since the last snapshot, are frozen as read only to become the new baseline. Because snapshots record only the differences from the previous snapshot very little storage space is consumed.

Setting it up

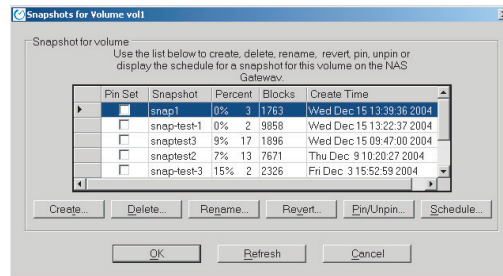
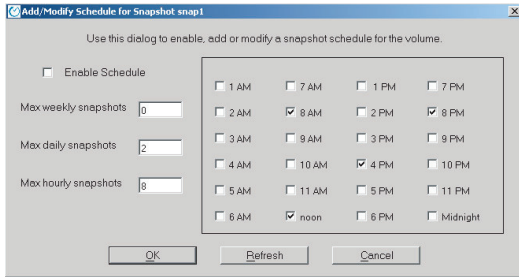
The technology is simple to use and very efficient in its use of resources. Snapshots can be taken on-demand or at predetermined intervals by individual volume. The snapshot images can be maintained for varying periods of time to suit the business needs of that particular volume. The storage administrator sets the frequency of snapshots and the maximum number of hourly, daily and weekly snapshots to be held for each storage volume. As the maximum number of snapshots is reached, the oldest is deleted and the newest takes its place. Additionally, individual snapshots can be marked for manual deletion only so that known good images are not automatically deleted and can be retained. This may be useful before and after software updates are made, for example.

Snapshot Technology



A typical scheme might be to take snapshots every hour through the day on a rolling 48-hour basis, a daily snapshot might be saved each day on a rolling 2-week schedule, and then weekly snapshots might be retained for a longer period. This provides the system administrator with a good deal of granularity in getting back to a known good state.

Because it is a fixed point in time copy of the file system, a snapshot can be used instead of the primary data as a source for backup to tape, eliminating the need to freeze applications and to be able to ignore traditional “backup windows”. This means that tape backups are less likely to be interrupted and more able to be monitored in prime shift hours. ONStor’s snapshot technology integrates with leading backup software applications.



Recovery

Simple and efficient snapshot technology allows almost instantaneous recovery of individual files or complete volumes to a point in time. All of the security attributes are maintained with the snapshot copy to ensure any recovery is authorized. This means that users can be safely authorized to recover their own lost data, releasing IT staff from tedious tasks. Just the data needed can be restored, there is no longer a need to restore an entire backup tape to get to one or two files.

In the case of data corruption or virus infection, DataRestore allows the system administrator to restore the entire file system to a previous snapshot point. This allows full file system recovery to a known state quickly, minimizing user disruption.

Summary

ONStor’s snapshot technology is a powerful tool for the storage administrator. The technology is flexible enough to allow snapshots to be taken at intervals to suit the business application by storage volume. Business continuity is assured as the enterprise is protected from data loss whether it is caused by accident, carelessness or malicious attack. Data can be restored almost instantaneously without IT staff intervention and backup windows can be eliminated.