
TECHNICAL STUFF

- **Incremental backups complicate restoring individual files because the most recent copy of the file may be in the full backup or any of the incremental backups.**

  Backup programs keep track of the location of the most recent version of each file to simplify the process.

Differential backups

A *differential backup* is similar to an incremental backup except that it doesn't reset the archive bit when files are backed up. As a result, each differential backup represents the difference between the last full backup and the current state of the hard drive.

To do a full restore from a differential backup, you first restore the last full backup and then restore the most recent differential backup.

Suppose that you do a full backup on Friday and differential backups on Monday, Tuesday, and Wednesday, and your server crashes Friday morning. On Friday afternoon, you install a new hard drive. To restore the data, you first restore the full backup from the previous weekend. Then you restore the differential backup from Thursday. The Tuesday and Wednesday differential backups aren't needed.

The main differences between incremental and differential backups are

- *Incremental* backups result in smaller and faster backups.
- *Differential* backups are easier to restore.

Backup and Virtualization

If your servers are virtualized using either VMware or Hyper-V, you should adopt an altogether different approach to backups. Instead of creating complicated schemes of weekly full backups and daily incremental backups that are based on backing up the hundreds of thousands (or even millions) of individual files on all your servers, a virtual backup solution can focus on backing up the files that represent entire virtual machines (VMs). These files are very large, but software exists that allows you to easily and quickly replicate these files onto other media.

Virtualization platforms such as VMware and Hyper-V have built-in capabilities to manage this replication, but you can also purchase third-party solutions that can turn this replication capability into a full-fledged backup solution. For example,