

Backup Data

Data Backups

Why backup your data? Backups are used for two primary reasons: Disaster Recovery and Record Archiving.

Disasters come at many levels: first, a computer failure or virus attack can destroy data. Next, environmental disaster such as an office fire, flooding or theft. And of course, major disasters such as tornadoes and hurricanes.

Record archiving may be necessary for financial and legal reasons. Having an organized data backup process is not only helpful, it may be required.

Types of Backups:

FULL copies all computer files to the backup media (Tape, CD, DVD). These can be of the entire computer so that a new computer can be cloned to look like the original (for example, the computer is destroyed or stolen). Other Full backups may be just for the data, not the operating system and software applications.

DIFFERENTIAL copies only those files that have changed since the last Full backup

INCREMENTAL copies only those files since the last backup of any kind

Why so many types of backups?

Backups take time. A small business can usually run a Full backup every night. As your business grows, there is more data and it may take all night to run a Full backup.

You may find you need more than one tape. Many businesses buy auto-loading tape drives that feed additional tapes into the backup process without human intervention.

You may get to the point where you have so much data, that the backup process doesn't end before you start your business day; in that case you may have to use Differential backups.

This is done by performing a weekly (or monthly) Full backup, usually on a Friday night (since it may take a while). The subsequent business days are backed up using a Differential backup.

How does that work?

When a Full backup is run, all the files on the hard drive have an electronic 'flag' set that states the file has been 'backed up'.

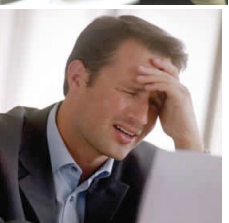
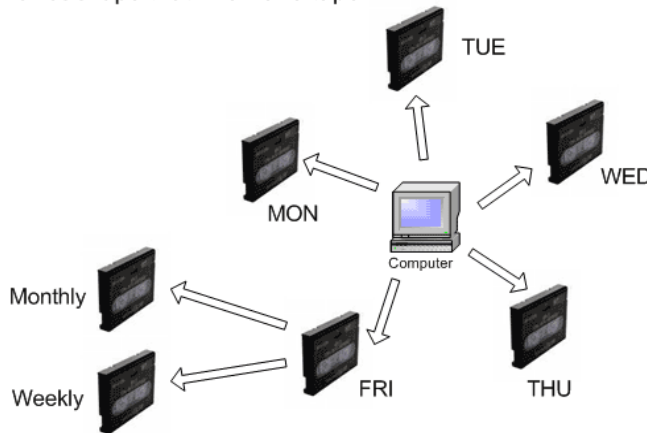
When a file is changed, or a new one added, its flag is set to state it is 'not backed up'.

A Differential backup only copies those files that have the flag set to 'not backed up'.

To recover the data, it is first restored using the last Full backup media, then applying the last Differential backup.

Full Backup

for backups that fit on one tape



Backup Data

■ Backup Media Storage

Tapes or other media should be stored in a fire rated safe. These would be available for quick access in the case of a first level disaster (e.g. computer failure). To protect against other levels of disaster, weekly and monthly tapes should be stored offsite in a secure location [remember, there may be sensitive financial or medical data (HIPAA)].

■ Databases

If your office application uses a database (for example on Microsoft SQL Server) you may have to backup the Transaction logs.

This may require a backup utility program that specializes in backing up databases. The reason for this is that databases track each transaction of writing data to the database and it uses that history to keep track of where the data resides. You could restore the database file itself, but without the logs, the database would not be able to find the data. Talk to your application vendor for more specifics on backup requirements.

■ Types of Media:

TAPE – Many small business use tape drives, which come in a variety of types and sizes. Some of these drives are in the computer itself; some drives can be on the network and can backup a number of computers across the network. Fancier systems can store a number of tapes and auto-feed them as needed.

CD / DVD – Backups can be burned to a CD-R or DVD-R. Avoid the Read/Write (RW) variety as there may be compatibility issues if reading them in a different computer.

USB Drive – Thumb drive, geek stick, flash drive. Available in larger sizes, these may be enough for some backups. An external USB hard drive can also be used for backups, but not feasible for regular archiving

OnLine Backups – a number of online backup services are available. These are handy for laptops or home computers. There is a level of risk for business systems as you may lose your connection to the internet during a backup, and it is much slower than backing up on your own network. As an additional safety archive, done periodically, this option may have some value.

Other Data Protection

While our main topic is data backups, there are other ways to increase the safety of your data..

RAID - Redundant Array of Inexpensive Disks. By having 2 or more hard drives in a computer, you can set up a way to protect data from hard drive failures. The most used are:

RAID 1 which is 2 or more drives receiving the same data simultaneously. If one drive falls, the other(s) still contains the data.

RAID 5 which is at least 3 drives set up in a way where any 1 of the drives can fail without losing data.

Differential Backup for larger backups

