

# Backup - Concepts and Tools

TCPC General Meeting - January 2016 - Jack Ungerleider

# Terminology



Primary Drive



Backup  
Software



Backup  
Device



Backup Set

# Types of Backup - Storage

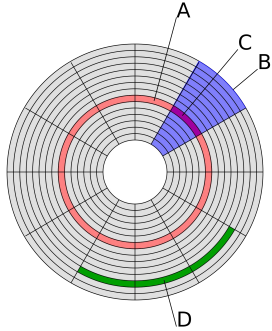


Image based backup - Creates a byte by byte copy of the drive data in a format that can be restored as is to the initial disk or a replacement creating a copy of the contents at the time the image is created




File based backup - This is the traditional form of backup in which you specify a group of files to copied to the backup device.

# Types of Backup - Procedure

**Full backup** - All files specified for backup are copied to the backup device regardless of the state of the archive flag. All archive flags are set to “off” during this process.

**Incremental backup** - Only files that have changed since the last backup process are processed. The archive flag is checked for the “on” state before processing. It is set to the “off” state after processing

**Differential backup** - Common with image backups. Only the data that has actually changed is backed up.  
Used with large files (i.e. databases) in file backups.



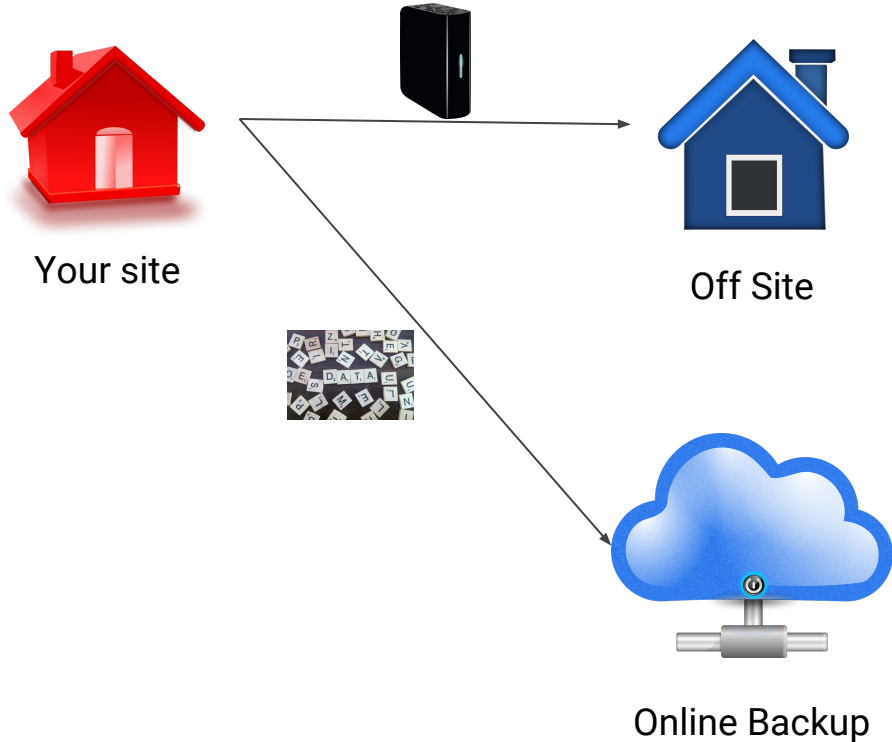
# Types of backup - Procedure

**Copy or Archive backup** - Not really a backup process except that it uses the backup software and backup device to copy data from the primary drive. Sometimes used to clone a system. The archive flag is NOT reset in this process.

**Proactive or real-time backup** - Popular with client/server backup systems, including online backups. The client software runs in the background and when files are changed it will copy the new file to the backup device as quickly as possible based on configuration settings.



# Where to store? Online vs Local



With local storage have multiple devices and keep only one at your site.

# A traditional weekly backup plan

Monday I / D	Tuesday I / D	Wednesday I / D	Thursday I / D	Friday I / D	Weekend F
-----------------	------------------	--------------------	-------------------	-----------------	--------------

The traditional weekly backup plan in a Monday-Friday business environment consists of a Full backup on the weekend and Incremental or Differential backup during the week. If the system supports proactive backup that may be used in place or in addition to the I/D scheduled backup.

Generally multiple backup devices are rotated for the full backups. Incremental backups might be handled on a separate device.

# RAID vs Backup

Tonight's discussion is the result of some questions asked by TCPC member Don Hanson at the October meeting. Don shared some additional questions after that meeting one of which was on RAID vs Backup. Specifically did he need to backup his system if he used RAID 1 disk mirroring?

The answer to that question is Yes.

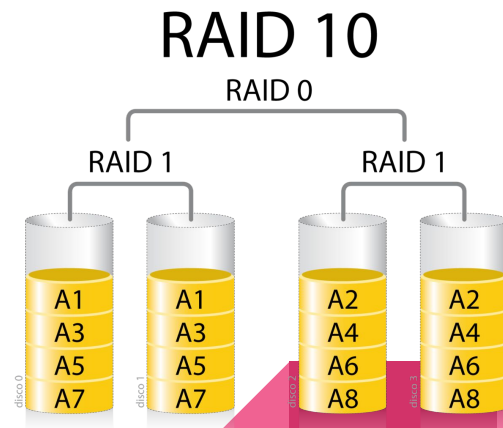
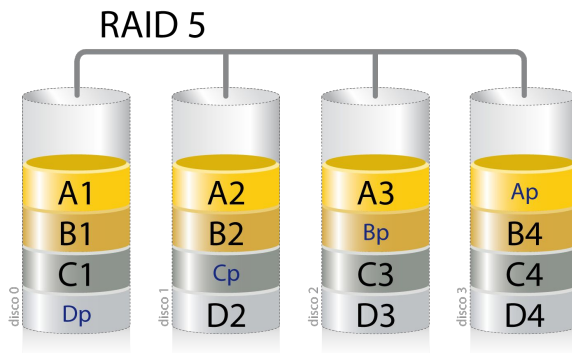
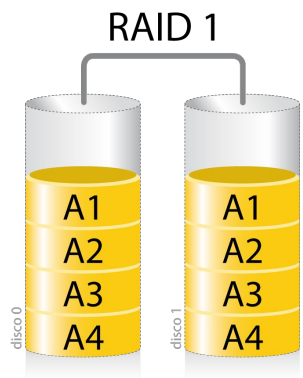
RAID provides fault tolerance and can lessen the severity of drive failure. But its not a substitute for the extra copy of your data that a backup creates.





# RAID - A quick introduction

The original meaning of the acronym RAID was Redundant Array of Inexpensive Disks. These days the word inexpensive is often replaced with independent.



# Backup Tools - Basics

Most operating systems include some sort of tools for backup. These tend to be simpler in their approach than specialty tools.

Microsoft: Windows Backup (Windows 7) and File History (Windows 8+)

Apple: Time Machine

Linux: Various tools based on cpio, tar, and rsync



# Duplicati

Duplicati is a cross platform tool that allows you to backup to your available online storage accounts. (Dropbox, Google Drive, OneDrive, etc.)



# Available Backup Software

Tim Fisher has published a series of articles on backup software at about.com.

8 Best Commercial Backup Software Programs:

[http://pcsupport.about.com/od/maintenance/tp/backup\\_software.htm](http://pcsupport.about.com/od/maintenance/tp/backup_software.htm)

34 Free Backup Software Programs:

<http://pcsupport.about.com/od/backup/tp/free-backup-software.htm>

34 Online Backup Services:

[http://pcsupport.about.com/od/maintenance/tp/online\\_backup\\_services.htm](http://pcsupport.about.com/od/maintenance/tp/online_backup_services.htm)

