Hard Drive Storage Options

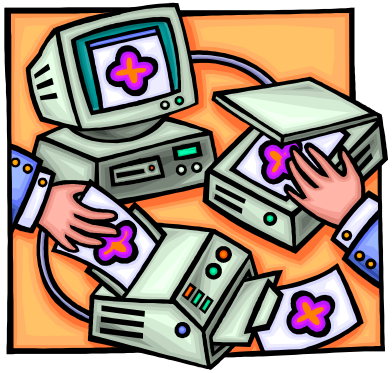
Where will you save your files?

Jean-Luc Vincent - 2010/10/26

What is the purpose?

- Once you have taken your digital photos, decided to scan your paper or film photos, or want to save any files, then what?
- You need somewhere to save your files.
- Any files that you want to secure, you must
  - backup,
  - backup often,
  - backup regularly.

What are your choices?



- What are you trying to accomplish?
  - hobby, school, study, work?
- How much can you do yourself?
- What is your budget?
- How important are the images?
- Multiple backups required?
- Do you need to share the images? other files?
- Do you have a home network?
- How many are accessing the images?
- Do you want wired access?
- Do you want wireless access?
- Do you need multiplatform compatibility?
  - Apple, Windows XP, Windows Vista, LINUX

Factors to consider

- Flexibility
- Reliability
- Simplicity or ease of use
- Price
- Longevity
- Connectivity
- Speed
- Sharing
- Database use

What are your devices?

Single internal hard drive

- Cheapest
- Least reliable
- Partly shareable if computer turned on and logged in

Multiple internal hard drives

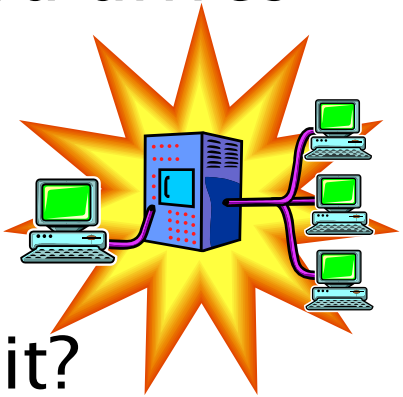
- Can be shared if computer turned on and logged in
- Not that expensive
- Can be used as part of a Redundant Array of Independent Disks (RAID) (explained later) setup using a special interface card for various interfaces, such as IDE, SCSI, SATA, eSATA, FireWire, USB (more expensive: $36 and up into the thousands)

External hard drive

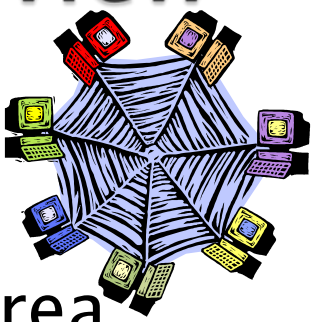
- Hard drive inside an external housing
- USB 1.2 (old), 2.0 (common), 3.0 (new)
- FireWire or i.Link or IEEE1394 Serial Bus: 400, 800 (1600 and 3200 coming soon)
- External SATA (eSATA)
- Portable and therefore susceptible to shocks
- Can be used by a number of users: passed around
- Can be shared on a network via a logged in computer or via a shared USB port on a hub

File Server

- Can accommodate a number of hard drives
- Great flexibility
- Great reliability
- Expensive
- Labour intensive: who will operate it?
- Usually training is need
- Usually for a larger number of users
- Need legal server and user licences: $$$
- Can have or give access to the Internet
- May also be an application server



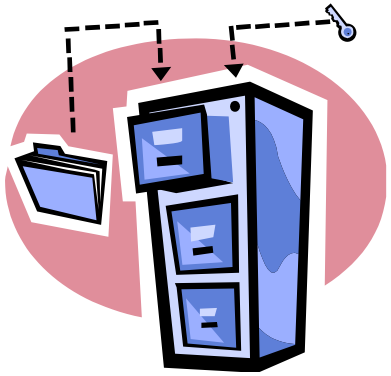
Network-attached storage: overview



- Less and less expensive
- Accessible from anywhere on the local area network, wide area network, including wireless, and the Internet
- Fast: 100Base-T, 1000Base-T (Gigabit)
- Easy to set up after reading the instructions
- Hard drives included: no manual labour
- Hard drives not included: some manual labour, can choose size

Network-attached storage: overview

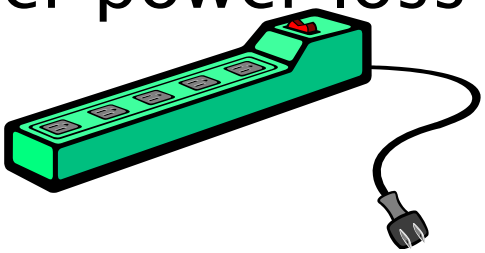
- Organised with folders
- Size needed:
  - 1,000 images (ie. 5" X 7" @ 300 ppi = 9.01MB) = 9.01GB
    - 10,000 images = 90.10GB
    - 100,000 images = 901GB
- Working documents
- Music files
- Videos



Network-attached storage: overview

- Firmware and software **updates recommended**!!! increased reliability, more options and functionality, clearer configuration

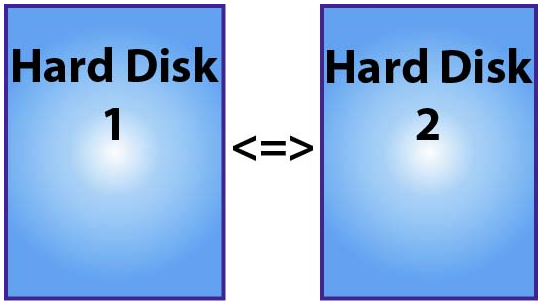
- Windows, Macintosh, and Linux compatible
- Usually have other features: music (iTunes) server, FTP server, DNS server, firewall, USB print server, computer backup at login…
- Usually left on all the time on a surge protector, can auto reboot after power loss



Network-attached storage: RAID

- Really should have 2 or 4 hard drives (identical pairs) in RAID 1 setup for redundancy
- Mirroring of an even number of drives gives very fast doubling of data when copying to the network storage
- Think of the future: get drives that are large enough

Network-attached storage: RAID



- RAID 1:

1Terabyte hard drive + 1Terabyte hard drive = 1Terabyte (work as 2 identical hard drives)

- RAID 0 and JBOD or spanning:

1Terabyte hard drive + 1Terabyte hard drive = 2 Terabytes (both work as 1 very fast larger hard drive)

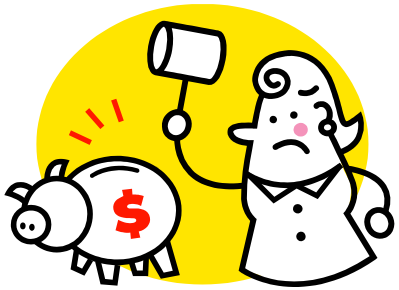
- no RAID:

1Terabyte hard drive + 1Terabyte hard drive =

2 X 1Terabyte (work as 2 independant hard drives)

- many more versions

Low Cost & Large Size Capacity



- Scenario:
  - 1.5TB hard drive for $77 X2 = $154
  - network storage device $158
  - = around $312 + taxes
- Connected to home network wireless hub managing the IP address of the NAS
- Everyone can access the files on the network storage if they have have permission to connect to the home network, including through the Internet

The end…

- Take some time to plan ahead
- Do your research, like tonight
- Think flexibility
- Seek various opinions
- Technology changes
- Buy only after you have become at least somewhat confortable with the technological options
- Shop around
- Thank you…