

MERIT Advanced Training Overview

- Topic:** Formatting and Using External Hard Drives
- Objectives:** Learn the basics about common file systems
Learn to format a hard drive for a Mac, PC or both
Learn how to partition a hard drive
- End Product:** A screen shot from a computer that shows a hard drive with two partitions, one formatted for a Mac (HFS+) and the other for DOS (FAT32).
- Basic Instructions:** Use the provided hard drive to follow the instructions.
- Estimated time:** 30 minutes

External Hard Drives: The Issue

External hard drives are great for backing up or transferring files. In the past few years, prices of hard drives have declined while capacities have increased. You can now buy a 500 GB hard drive for around \$100.

Circulating hard drives, however, still raises some issues. First, people often need to keep files on a hard drive for longer than a four day loan period. There's not much we can do about this. Second, hard drives have to be formatted for a particular file system and different computers use different file systems. This problem is the subject of this advanced training.

What is a file system? Which one is right for me?

A file system is a method of storing and organizing computer files. A disk file system is used to store data on a disk drive.

Today, we'll be formatting drives to disk file systems. You can read more about them in Wikipedia or something, but for now it's enough just to know their names and what type of computer uses them.

NTFS (New Technology File System) used by PC's

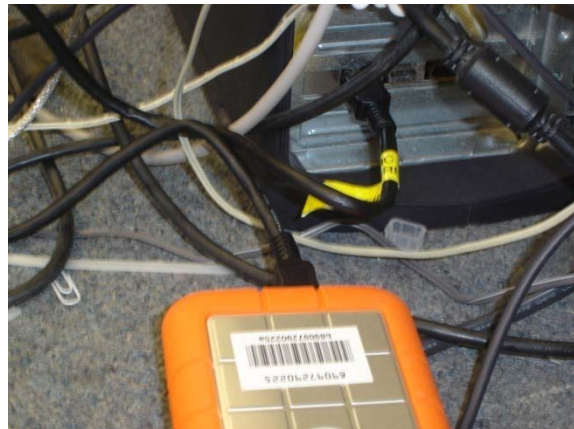
HFS+ (Hierarchical File System) used by Macs

FAT32 (File Allocation Table) old file system designed for DOS but can be read and written to by Macs and PC's. Cannot handle files 5 GB or larger.

Connecting to a PC

Grab the provided hard drive and go to a PC (the supervisor computer (if available) is your best bet because we'll need to have administrator privileges). Connect the hard drive to the computer using either the firewire or usb connectors.

Firewire: A faster connection than USB but not available on many PC's.

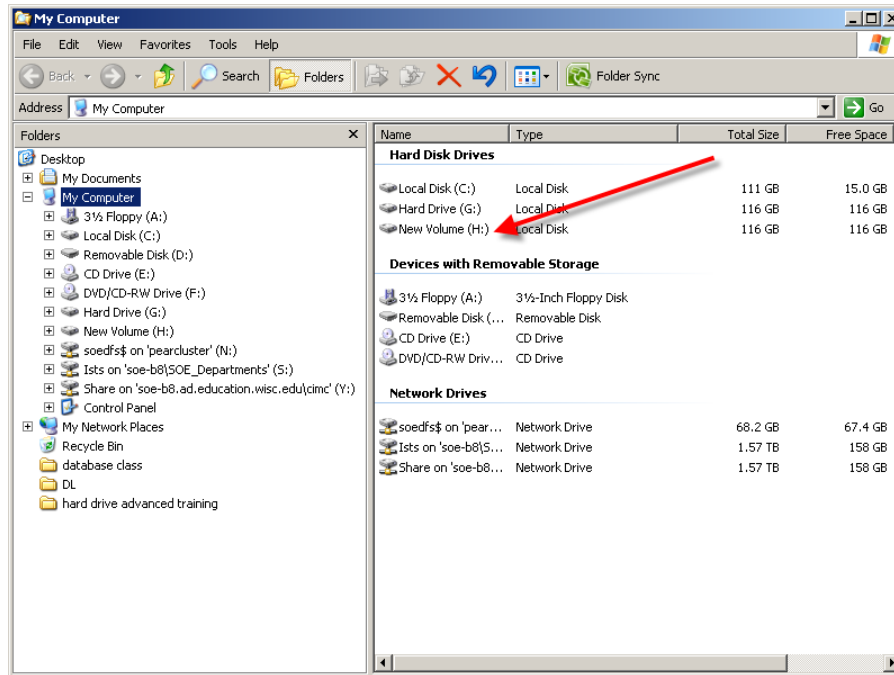


USB: On All Macs and PC's. If using a powered port, only the usb cable is needed. If port is unpowered (hard drive makes beeping noise) power cable must be connected through other usb/power cable.

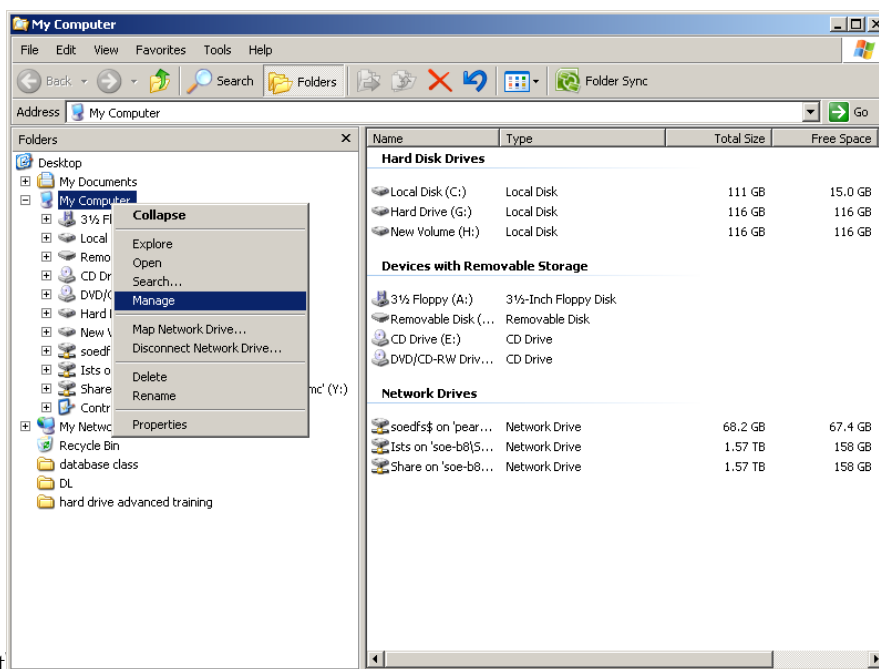


Manage Drives

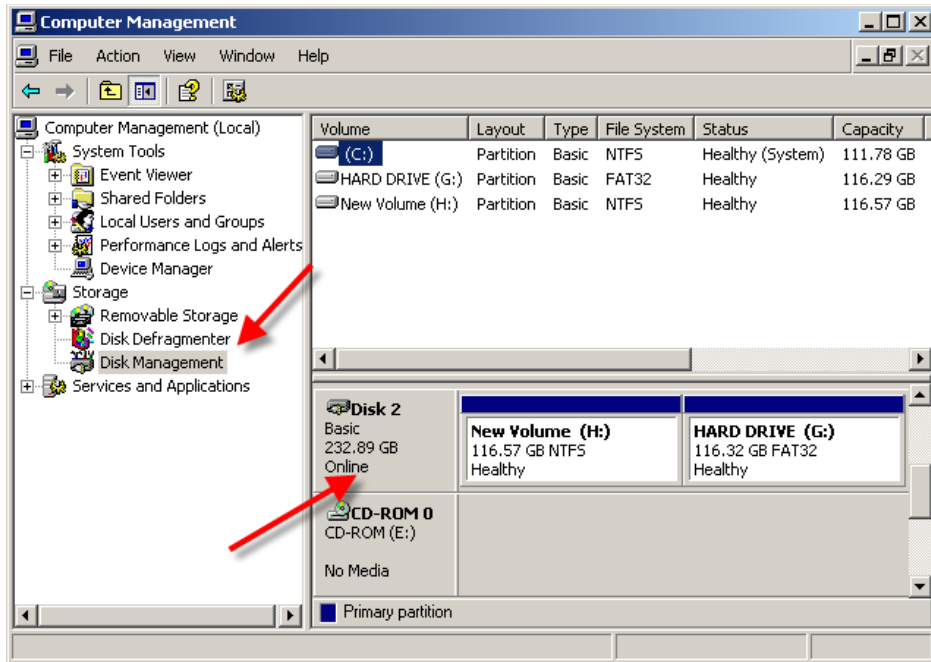
If the computer recognizes the hard drive, it will appear in the My Computer window.



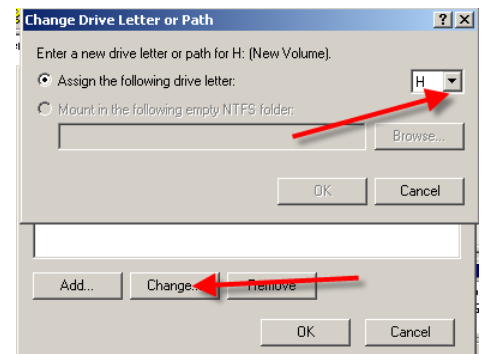
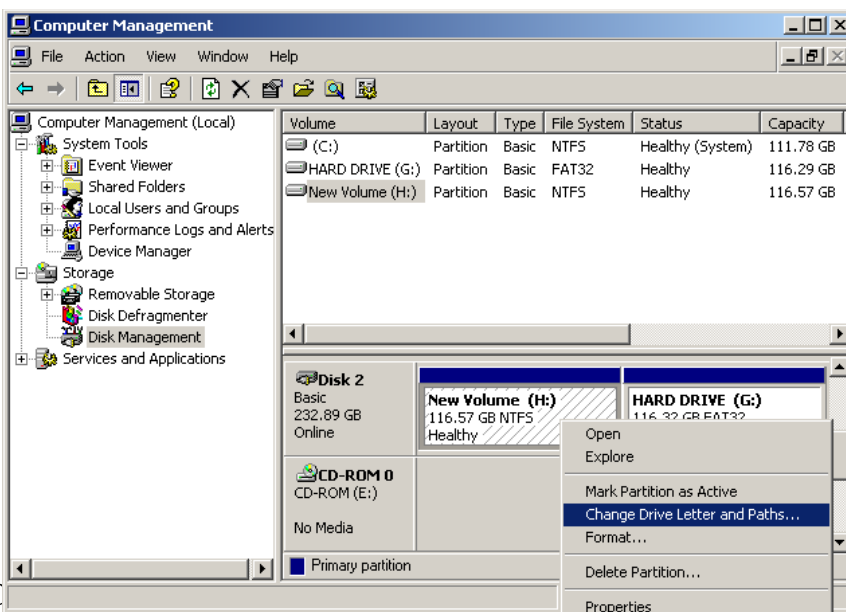
If it doesn't appear or you want to reformat the drive, right click on My Computer and choose Manage.



Choose Disk Management from the left section and then identify the drive you've plugged in on the right.

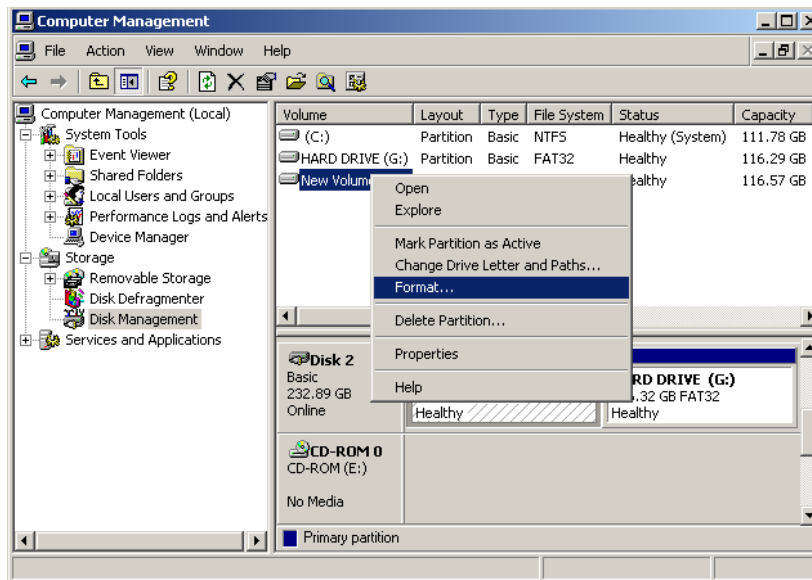


Early in the days of Windows XP, drives were often not recognized because they attempted to be assigned a drive letter that was already assigned to another drive. This problem is not as common as it once was, but it is still sometimes useful to be able to manually change a drive letter. To do this, right click on the drive you want and choose Change Drive Letter and Paths. You can then click Change and assign a new letter to the drive.

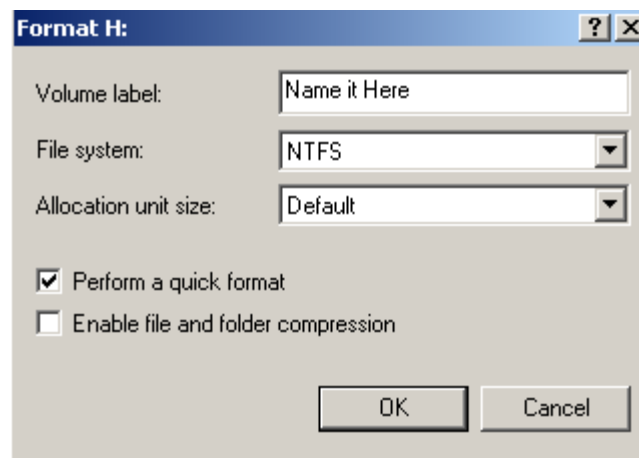


Formatting to NTFS

To format the drive, right click on the drive and choose Format.



You can then name the drive with the volume label. The only available file system if the volume is larger than 32GB is NTFS. Also, unless you have 20 minutes or more for the computer to do a full scan of the drive, I'd recommend doing a quick format.

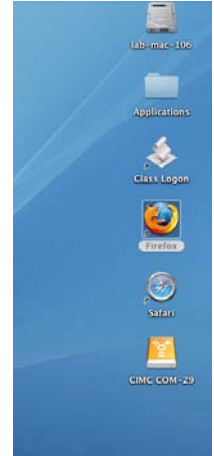


Safely eject your hard drive from the computer. This completes the PC part of this advanced training.

Connecting to a Mac

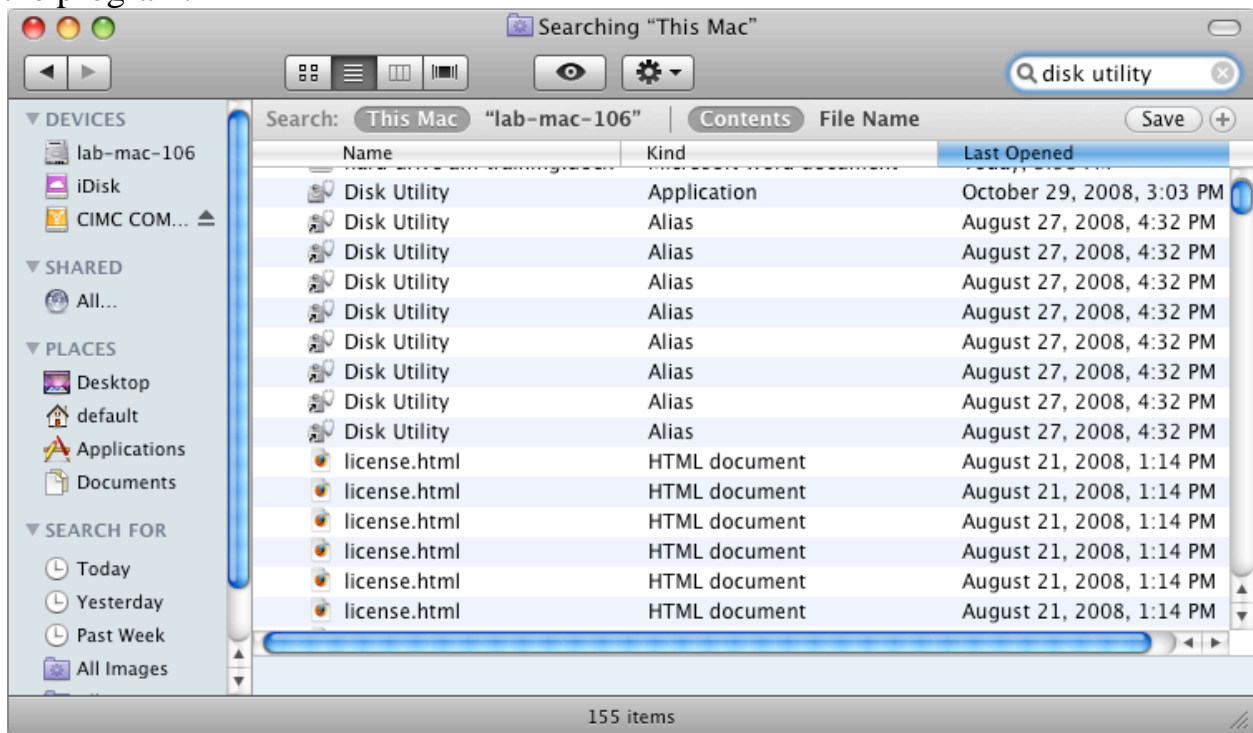
Now, we'll connect the hard drive to a Mac computer. It's the same as a PC, except the firewire port is in front. I'd recommend using the firewire instead of the usb because it's faster and never requires a second power cord.

A few seconds after you plug in the hard drive an icon should appear on the screen that corresponds to the hard drive.



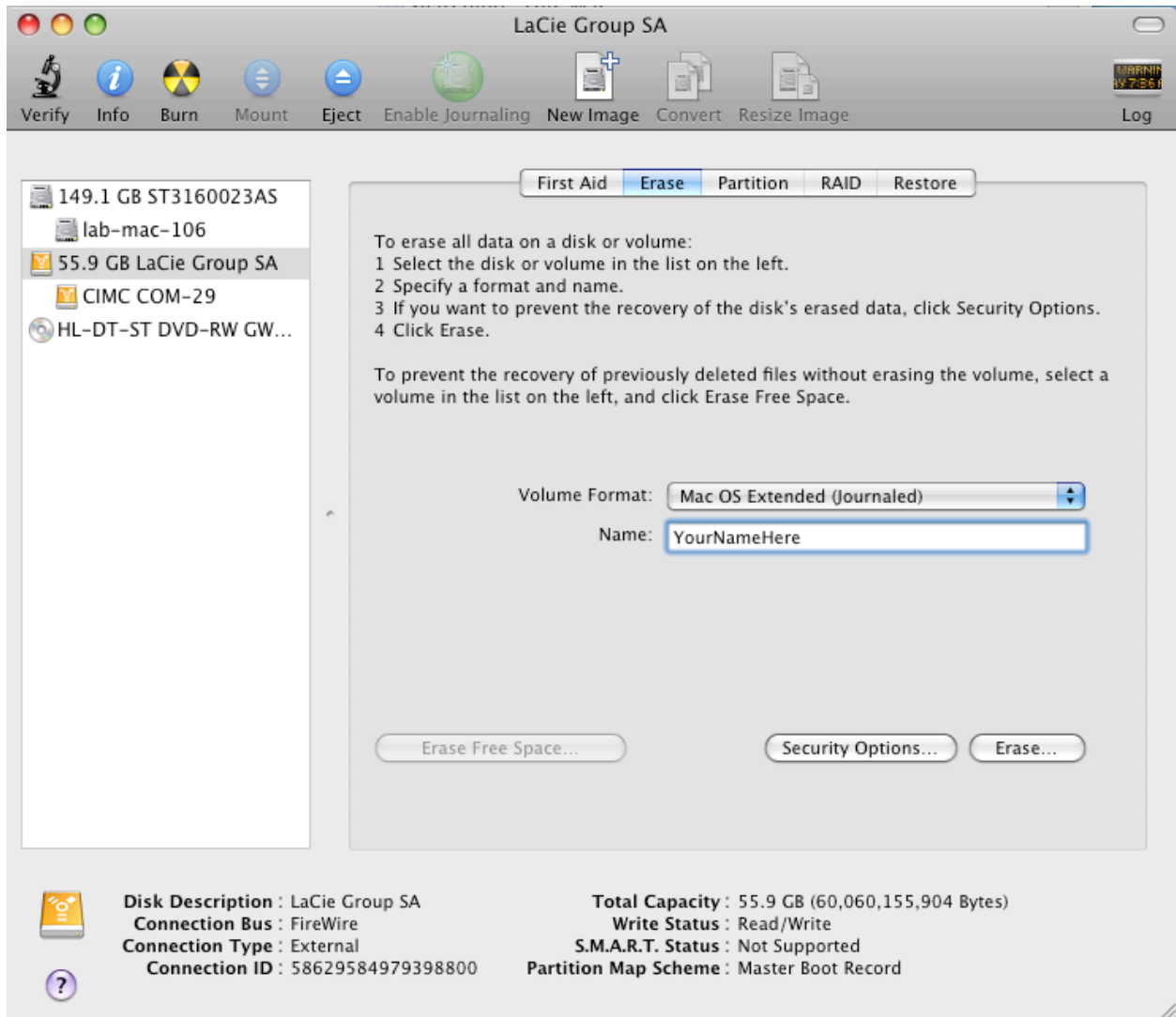
Opening Disk Utility

We're now going to start Disk Utility, which will allow us to format the drive. Double click the hard drive icon. Then, in the search box in the top right corner of the window, type "disk utility." Double click one of the disk utility icons to launch the program.



Reformatting

To reformat the disk, click on the icon associated with the hard drive. Next, click the tab that says Erase. Under Volume Format, choose Mac OS Extended (Journaled). This is the HFS+ (Mac Specific) formatting. In the Name slot you can title the volume. In this case, put in your name. Finally, press the Erase button.



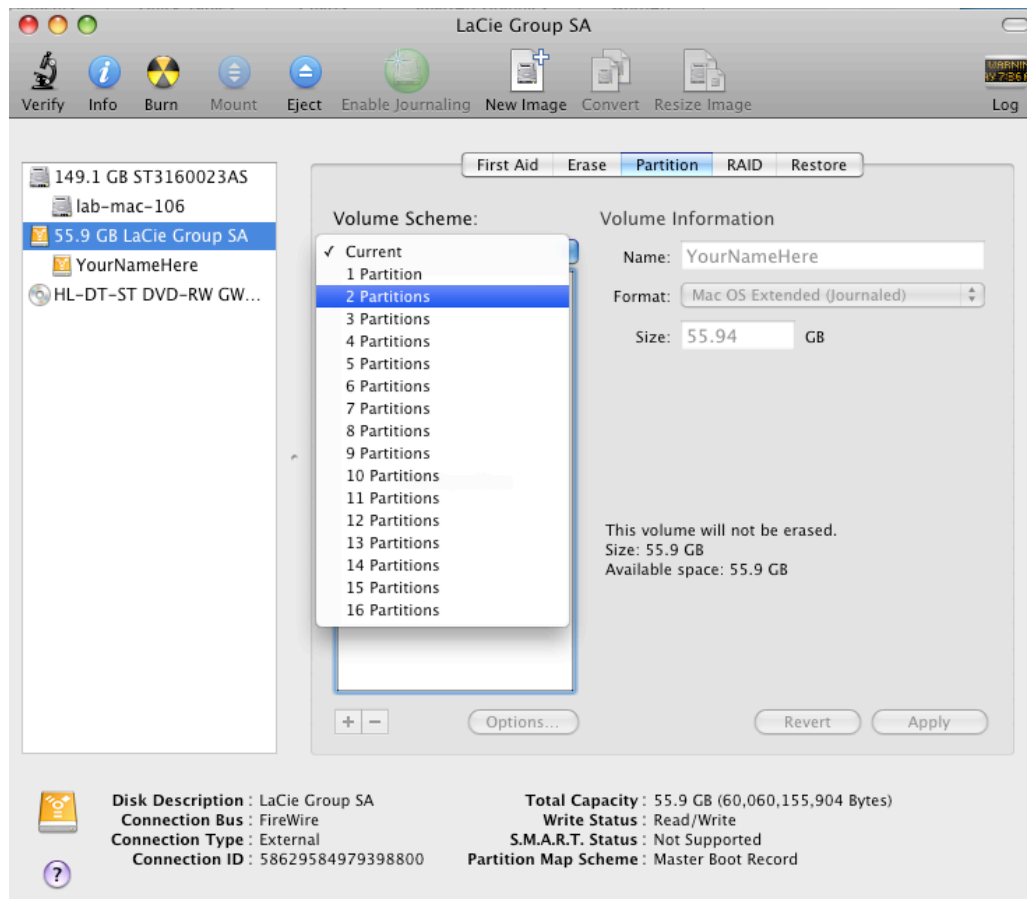
Partitioning

Now, remember our initial dilemma. We're circulating hard drives to people and we don't know whether they have a Mac or a PC. The FAT32 format can be written by Mac's and PC's, so it seems like it would be the obvious choice. The problem is that many of our patrons are using iMovie and saving files much larger than FAT32's 5 GB limit. Frustrating!

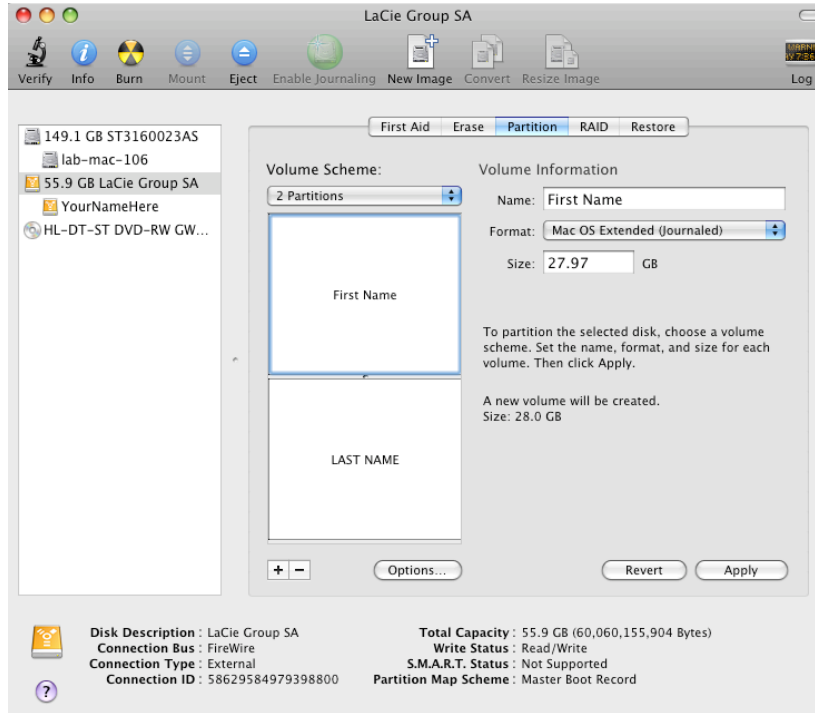
Wouldn't it be great if we could format half of the hard drive for Mac and the other half FAT32? We can in we partition the hard drive!

(Note: You may ask, why not go half Mac and half Windows NTFS? We could, but FAT 32 allows us to transfer files from Macs to PCs (NTFS doesn't) and the 5GB limit isn't as much a problem because less video editing is done on PC's.)

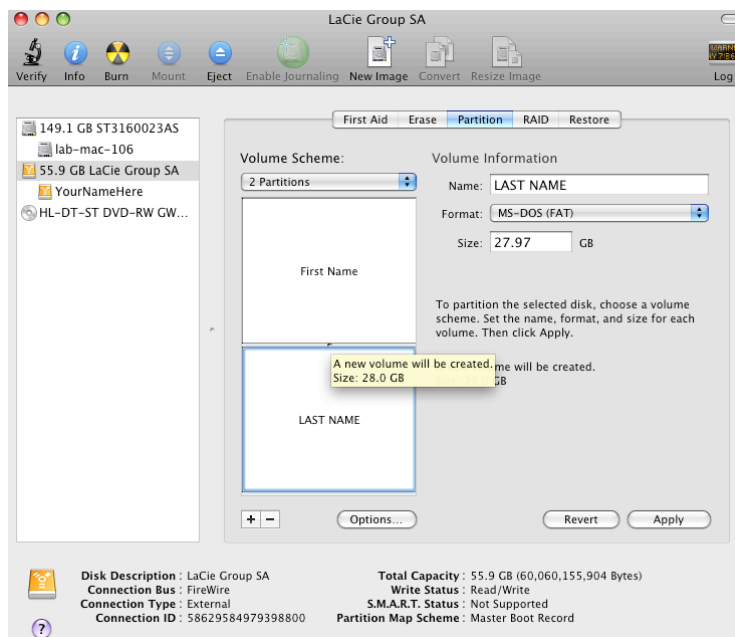
We'll now use disk utility to partition the hard drive. Select your hard drive in Disk Utility and choose Partition. From the Volume Scheme menu choose 2 Partitions.



Then, click the top partition. Put your first name in the name. Make sure the Format is Mac OS Extended (Journaled) and make sure that the “Size” is about half the hard drive’s total capacity.



Next, click on the bottom partition. Put your last name in the Name field. Then, under Format choose MS-DOS (FAT). The Size should be about half the capacity. Now, press Apply.



Finally, confirm that you want to partition the disk by pressing Partition.

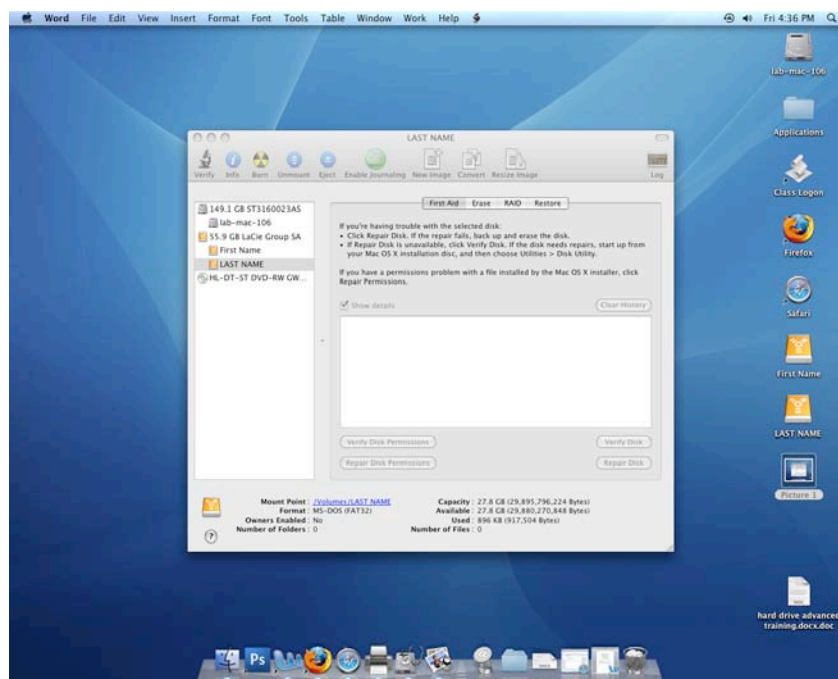


You should now see two partitions in disk utility and two drives on your desktop.

Prove It!

To make sure you did this assignment and did it right, we're going to make a screenshot of the completed task.

Set your screen so that disk utility is up with your hard drive visible. Also, have the drives visible on the desktop. Then, press Command(apple)+Shift+3. This will save a screenshot to your desktop. It should look something like this:



Email it!

Now, email the picture as an attachment to Matt to prove you're done. His email is: jabaily@wisc.edu

Optional

If you want to see what the hard drive will look like on a PC, plug it into one and find out. You should be able to see the FAT32 volume in MyComputer. If you go into disk management, you should be able to see both partitions, but it won't recognize the Mac formatted one. If you wanted to, you could format one of the partitions to NTFS (conceivably, you could set up 3 partitions on a Mac (two HFS+ and one FAT32) and then reformat one to NTFS in order to have one of each file system).

Restore It

We need to get rid of the partition to prepare it for the next person. Use disk utility to erase the whole hard drive one more time (see above instructions). Make sure you erase the whole disk and not just one of the volumes/partitions.

That ends this advance training. Good work!