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Rules for Working With Hard Disk Drives and Safeguarding Data

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I have learned a few lessons the hard way over the many years I have been working on computers and a few of them have been very expensive. Here are my rules for working with hard disk drives and safeguarding data:

Don't work on disk drives when you are tired. In one case I lost thirteen years of work due to multiple, dumb errors made because of fatigue--wiped-out all three copies, wrote stuff on top of them, and could not recover them. Fortunately, most of the real valuable stuff was still on paper. Know when to quit.

Don't be in a hurry, lax, or take unnecessary chances. Know what you doing, think before doing it, and do it a logical sequence of steps. Try to avoid a distracting environment. Know when to stop.

Observe Antistatic Procedures. Manufacturer's pack hard disk drives in anti-static bags for reason... Many people don't realize that computer components can be damaged by static electricity and a problem may not appear until months later when a power surge completes the damage. Ideally, you should wear a grounded anti-static wrist strap when working on computer equipment, especially when handling memory and CPUs. Also, the use of grounded anti-static mats on the floor and on the workbench is a good practice. However, these items can be too expensive if you are building or upgrading just one computer. As a minimum, my advise is to make sure your body is touching the metal on the computer case when handling the CPU and memory. It would also be a good idea to work with bare feet during this critical time. Try to avoid touching drives, boards, memory, etc. with your clothes. Clothing can quite often be charged with static electricity, especially during cold-dry, Winter days. When handling a drive, try to avoid touching the printed circuit board. If a computer can't find drive after being in use for a few months, it may because the printed circuit board got zapped when the drive was installed.

Scan for viruses before working on a customer's or your friend's computer. Take the time to make sure the virus data base is up-to-date before you do it. Scan the computer and any unknown floppies that will be used on the computer. This comes from someone who has had a whole shop full of infected computers... a big shop... more than once. Disinfect before it

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spreads.

Back-up your data before doing anything major to a hard disk drive. Backup critical data twice and to different media/drives. Murphy's Law applies here; the minute you do not have a good backup something will go wrong and you will lose it. In one case, one of my technicians made a couple of errors and wiped-out the only copies of a module in a customized accounting program. His biggest mistake was to assume that regular backups included the programs. It took three expert man days and many dollars to recreate the module. Besides backing-up My Documents on a Windows 9X/Me computer be sure to back-up such things as:

- user data located elsewhere such as Microsoft Works documents and Intuit Quicken Pro company files
- C:\Windows\Cookies
- C:\Windows\Favorites
- C:\Windows*.pwl (password files)
- *.dbx and *.pst files (Outlook and Outlook Express personal folders -- search for them with the Windows Explorer)
- Netscape directory/folder if you use it.

Backup now or cry later.

Don't trust tape or tape drives. Don't assume you have a good backup just because a customer regularly backs-up his or her data to tape. I have found that tape drives and tapes are notoriously unreliable, especially if they have been in use for about the same amount of time as it takes to have the first disk drive problem. Many times the tape of the last backup, and often the last two backups, were no good. And, you know, backups of garbage are exactly that... Also, I have seen many cases where a customer or batch program was not actually backing up the data or was not backing-up all of the data. Take the time to back-it-up yourself and make two of them, one them preferably on something besides tape. I usually back up to a scratch drive(s) temporarily connected to the customer's computer and/or to a network server. These methods are much faster than tape and more reliable. When it comes to backups, trust no one except yourself.

When backing-up check to see if the drive is compressed.

Be sure to backup the drivers and compressed volume(s).

Record configuration data before wiping that drive. You can save a lot of time by copying or writing down data on that hard disk drive before wiping it clean. ISP configuration, the [Windows Product Key](#), MODEM info, local network info, passwords, phone numbers, product serial numbers and activation keys, etc. Record now or work more later.

Don't wipe a drive until you have to. Don't be in a hurry to

clean-up data after or during a job. If you don't have to erase backup files or old disk drives right away, keep that data around until you need the space. If you move data from an old drive to a new one and put the old drive back in the computer with the new one, there is no need to erase the data on the old drive until the customer needs the space. If something goes wrong, the data will still be there. The minute you erase old data/format a drive when you don't have to, you will need it.

Don't prep a new drive while an old drive with data is still attached. It is far too easy to make a mistake and remove a partition with data with fdisk or format the wrong drive/partition. It only takes a few seconds to disconnect both cables to the drive with data.

Do not put a drive where someone can bump into it and knock it off a workbench, etc. They will.

Do not set a drive connected to power on anything with the printed circuit board down. The minute you do something will turn it on and short-it-out. It is OK to run a drive out of the case up-side-down. All modern drives that I know of will [fly](#) up-side-down. Some real old ones (less than 100 Mbytes, as I recall) will not.

Do not over-torque a drive. Do not over-torque the screws securing a drive to a chassis. Never over-torque any screws securing any kind of drive. You can warp the frame and ruin the drive. Always use the correct screws for a given drive. They may vary with the type and manufacturer of a drive. Those supplied with various chassis vary. A screw that is too long can also ruin some drives.

Keep magnetic tools out of your shop. They shouldn't damage a hard disk drive, but they will wipe floppy disks and tapes with data, etc.

Larry

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