

## Re: Cloning a disk using dd

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- *From:* Douglas Mayne <[doug@xxxxxxxxxxxxxx](mailto:doug@xxxxxxxxxxxxxx)>
  - *Date:* Fri, 02 Nov 2007 09:55:28 -0600
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On Thu, 01 Nov 2007 17:30:12 +0000, General Schvanzkoph wrote:

On Thu, 01 Nov 2007 08:27:28 -0600, Douglas Mayne wrote:

On Wed, 31 Oct 2007 19:44:41 -0500, General Schvanzkopf wrote:

I'm trying to clone a Win2K disk using Fedora Live on a USB FLASH disk.

I did a

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dd if=/dev/sda of=/dev/sdb
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It seems to have cloned the MBR correctly and the partition layout looks correct when I look at it using GParted. However when I tried to boot the cloned 2K disk it started to boot and then failed with an inaccessible boot disk error. When I booted the original 2K disk and tried to look at the cloned disk it said that the disk wasn't formatted. So it appears that the NTFS file system wasn't cloned correctly.

The source disk is an old 40G that I had laying around, the destination disk is a new 500G. After the dd there was a 40G partition on the 500G disk and dd reported that it copied the right number of bytes.

Is there a switch to dd that I need to add to the command?  
Does anyone have any idea about what went wrong?

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The partition table uses (cylinders, heads, sectors). If the two drives have a different number of (heads,sectors), then I don't think strict "dd" will work. The drives have to be almost identical to work, especially with Windows in the mix. However, if the OS is only GNU/Linux, then it might work because LBA disk mode is always used—even by the loader.

I think the dd worked fine, as long as I have the old drive in the system I can boot the cloned partition. The problem is that Windows is looking for something on the E: partition (where the original Win2K install was done) but the cloned partition is C:. In Linux I would just edit /etc/fstab and I'd be done but I don't know how to do an equivalent thing in Windows. You can change drive letter in Windows but you can't do it to the root partition and the problem seems to be that I need to change the new drives to be the same as the old drive's number.

IME, upgrading windows drives can be tricky, and can be made a bit worse if the original disk remains in the system at the first attempt to restart the Windows system with the upgraded disk. It will sometimes "just work" if the upgraded disk can reclaim the drive letters. But IIRC, there are cases when the drive letters will be wrong for whatever reason. There is a fairly quick method to reassign drive letters, if they get messed up. The tool to use is BART PE, the live CD in the windows world. To fix the letters, boot BART PE with the upgraded disk installed only. When the startup completes and the menu appears, then you can manually edit the registry on the upgraded disk. Make some notes on paper how Bart PE is assigning your disk partitions. Then use the registry editor from the saved system (say x:\winnt\system32\regedit32). CAUTION: making a mistake while working with the Windows registry can totally hose a Windows system!

1. Navigate to HKEY\_Local\_Machine->System->MountedDevices. The entries show how BART PE is assigning the letters. Save these entries to a temp file (Registry -> Save Key)
2. Load the "hive" for your upgraded system: (Registry->Load Hive), then point to the file, x:\winnt\system32\system. Load it at some point (say: sys2).
3. Navigate to the same point as described in step 1, but on sys2: HKEY\_Local\_Machine->Sys2->MountedDevices. Restore this key using the saved entries from step 1. Be careful. (Registry -> Restore Key)
4. If the order is not correct, then fixup the contents of the restored keys. For example, if C: and D: should be reversed, then you would do as follows:
  - 4.a. To Save value of \DosDevices\C: (which is type "REG\_BINARY") to a temp location, first select the value by double-clicking. A "CTRL-C" will

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copy the value to the clipboard. Now, paste it to a temp location– a text file works fine.

4.b. Copy the value of `\DosDevices\D:` to the clipboard using the same technique as 4.a.

4.c. Overwrite the value of `\DosDevices\C:` with the value in the clipboard (CTL-V).

4.d. Copy the value from the text file (saved in step 4.a) back to the clipboard (CTL-C).

4.e. Overwrite the value of `\DosDevices\D:` with the value in the clipboard (CTL-V).

The values have now changed places. Fixup any other mismatches using this technique.

5. When your done fixing letters, then unload the hive, `sys2`.

6. Shutdown BartPE and reboot using the upgraded disk. If everything worked as planned, the drive letters should be correct.

I should explain why I'm going though this pain. My girlfriend uses XP and no amount of pleading is going to get her to change. I'm planning on replacing an old 80G drive in her system with a new 500G, I also want to come up with a reasonably procedure for backing up her environment. What would be a pimple removal in Linux is a heart lung transplant in Windows. In Linux you would just do a clean install of the OS, which is a 20 minute operation, and copy the other partitions. If you have a distro sensitivity you can run a VM on top of the host OS and you are done, I do that all the time running CentOS VMs on top of Fedora. A backup in Linux is just an `rsync` of your important data and binary applications to another system. In Windows none of this is possible because the applications and the OS are entangled plus they all have licensing issues. Instead of backing up a few gigabytes you need to backup everything because you can't disentangle the OS + Apps + Data. I tried doing a VMware snapshot of here system so that she could run it as a VM (which can be easily copied to another disk or system) but that ran into the Windows Activation problem. When I booted the VM it demanded to be activated which I couldn't do without risking deactivating the host OS on her system. I can't do a clean install of the OS either because she claims that it took her months to get the system into the state that she likes and because she would have to reactivate both XP and some of her apps like Photoshop (she had to call Adobe when she moved over to this box in the spring).

The bottom line is that I need a procedure for moving and backing up an XP environment. I'm trying to do this with tools I understand, which means Linux tools, but I've had to learn more about Windows then I ever wanted to know. Does anyone have any suggestions for accomplishing this task?

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Windows has a backup tool called "DriveSnapshot", which is \$30, IIRC. I prefer making backups on Windows systems using ntfscd. This can be done with either a dual boot system, or else booting a live CD with the ntfscd included.

p.s. The reason that I've been using 2K and not XP for my experiments is that 2K doesn't use Activation, it uses the old serial number method. I'm doing this on my sandbox machine so I can start from scratch if someone has a straight forward procedure for doing this.

Note: comments inline.

I was away yesterday, and haven't read all of the responses on this thread, yet. Pardon me, if this response is covered farther down.

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Douglas Mayne

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