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Dual Booting

a step-by-step guide from windows to linux

So you want to dual-boot your Microsoft Windows computer and make it so you can use linux also. Well, this guide will lead you through a step by step to get you through the pains of repartitioning your hard drive without losing any files. **This guide is not responsible for any damages to your computer**, but so far, we have not had any complaints of it. Best wishes as you begin the procedures below.

step1 Defrag



Before you can begin to reallocate the hard drive to multiply partitions, you have to run Microsoft Defrag to move all of your files to the front of the drive. This is the most important step to not losing files during a dual-boot creation.

step2 restarting in ranish

Next, you need a program to edit the partition table, and that tool is ranish. Ranish does not work when running in Windows, so you need to make a DOS boot disk to run ranish in DOS. Copy the following to a disk.

```
command.com*
IO.sys*
scandisk.exe*
part240.exe
```

**find these in
C:\windows\command*

step3 Starting ranish

Once the computer comes up to the prompt, **A:**, type in "**part240.exe**". The GUI will load, and you can now edit the partition tables. If you are using a single partition computer running windows, your only partition will be a FAT32 partition. It may or may not have LBA scheme enabled. What ranish will do is tell the Master Boot Record or MBR, at what locations or sectors that the partition is located at. The drive is broken into Cylinders (about 8mb), Heads (about 30KB), and Sectors (about 500 Bytes). Each is smaller then the next one going from left to right. When you assign partitions you will be able to set where the partition starts and ends in Cylinders, Heads, and Sectors. The easiest way to find the size of the partition you are working on is by looking at the right most column entitled "Partition Size [KB]." One megabyte is about 1,000KB, one gigabyte is about 1,000,000KB. Also, if you fear a problem ahead, write down all of you setting so if something does go wrong, you can still boot.

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```
Ranish Partition Manager          Version 2.40.00          February 08, 2001
-----
Hard Disk 1  38,172 Mbytes [ 4,866 cylinders x 255 heads x 63 sectors ]
Using LBA
#  Type  Row  File System Type  Starting Cyl Head Sect  Ending Cyl Head Sect  Partition Size [KB]
0  MBR    Master Boot Record  0  0  1  0  0  1  0
1  Pri    Unused              0  0  2  0  0  63  31
2  >Pri  1  Windows FAT-32 LBA  0  1  1  4,865  254  63  39,086,113
3  Pri    Unused              4,866  0  1  4,866  87  21  2,751
4  Unused
5  Unused
6  Unused
7  Unused

      B - Boot flag on/off      INS - select file system      DEL - clear record
-----
- MBR -
# Partition  Size  Volume label: LOCAL          Starting: 63  Used
1>FAT-32    38,170  System id: MSWIN4.1         Drive num: 128  11,190M
2 Unused    0      File system: FAT32          Minimum size: 28,907,648  14,115M
3 Unused    0      Cluster Size: 32k          Partition size: 76,695,744  37,449M
4 Unused    0      FAT Size: 4,680k           Maximum size: 76,695,744  37,449M
-----
F1 Help  F2 Save = F3 Undo = F4 Mode = F5 Disk  ESC Quit
```

step4 Resizing

Now, using your arrow keys, select the partition you wish to resize, most likely it's "Windows FAT32 LBA". Now move over to the Ending columns, specifically "Cyl". You must decide, now, what size you want to resize that partition, look farther down on the screen where it says minimum size, this is the absolute smallest size you can make it. Partition size is the current size of the partition and the used column is the size in megabytes. The best way to do this is by just typing in a random number like 3,000, and seeing what size it is in the partition size column. Remember, to give space to grow, because once you install linux, you cannot reclaim that space without damaging linux. Also, feel free to mess around, because Ranish won't save any changes without asking you, if you mess up, just click discard changes.

```
Ranish Partition Manager
Problems with partition
Boot sector doesn't have valid information

Hard Disk 1 38,172 Mbytes [ 4,866 cylinders x 255 heads x 63 sectors ]
Using LBA

# Type Row File System Type Starting Ending Partition
Cyl Head Sect Cyl Head Sect Size [KB]

0 MBR Master Boot Record 0 0 1 0 0 1 0
1 Pri Unused 0 0 2 0 0 63 31
2 >Pri 1 Windows FAT-32 LBA 0 1 1 2,800 254 63 22,499,001
3 Pri Unused 2,801 0 1 4,866 87 21 16,589,863
4 Unused 0 0 0 0 0 0 0
5 Unused 0 0 0 0 0 0 0
6 Unused 0 0 0 0 0 0 0
7 Unused 0 0 0 0 0 0 0

B - Boot flag on/off INS - select file system DEL - clear record

- MBR
# Partition Size Volume label: LOCAL Starting: 63 Used
1>FAT-32 21,971 System id: MSWIN4.1 Drive num: 128 11,186M
2 Unused 0 File system: FAT32 Minimum size: 28,907,648 14,115M
3 Unused 0 Cluster Size: 32k Partition size: 45,399,627 22,167M
4 Unused 0 FAT Size: 4,680k Maximum size: 44,998,002 21,971M

F1 Help F2 Save = F3 Undo = F4 Mode = F5 Disk ESC Quit
```

step5 MBR resizing

If you got an error message at the top of the screen, then congrats, you are doing it right. The error message means that you have successfully changed one of two partition tables. Now you can always discard the changes at this point if you messed up by hitting esc a few times. But if you have done the changes correctly, you have to resize the Master Boot Record file with the change. Using your arrow keys, go back to highlight "Windows FAT-32 LBA" or whatever partition you changed, and press enter. Your highlight box should jump to the lower box, scroll down to "Partition size:". Now hit the backspace key until the box empties, and type in the exact number from the "Maximum size:" box. The red error should disappear. Now to get rid of the top error message, press enter again, and select save. The error message should go away. If it doesn't, then you need to stop and look at what you have entered, because something is wrong. I guess now is a good time to tell you that you should of written down all of the numbers so if you have a problem, you can restore back to original settings.

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```
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Hard Disk 1 38,172 Mbytes [ 4,866 cylinders x 255 heads x 63 sectors ]
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Problems with partition
Boot sector doesn't have valid information

# Type Row File System Type Starting Cyl Head Sect Ending Cyl Head Sect Partition Size [KB]
0 MBR Master Boot Record 0 0 1 0 0 1 0
1 Pri Unused 0 0 2 0 0 63 31
2 >Pri 1 Windows FAT-32 LBA 0 1 1 2,800 254 63 22,499,001
3 Pri Unu 1 16,589,863
4 Unu 0
5 Unu 0
6 Unu 0
7 Unu 0

Some boot sector settings have been changed
Save Discard Continue editing

B - Boot flag on/off INS - select file system DEL - clear record
- MBR
# Partition Size Volume label: LOCAL Starting: 63 Used
1>FAT-32 21,971 System id: MSWIN4.1 Drive num: 128 11,186M
2 Unused 0 File system: FAT32 Minimum size: 28,907,648 14,115M
3 Unused 0 Cluster Size: 32k Partition size: 44,998,002 21,971M
4 Unused 0 FAT Size: 4,680k Maximum size: 44,998,002 21,971M
= F1 Help = F2 Save = F3 Undo = F4 Mode = F5 Disk = ESC Quit
```

step 6 Done?

Almost. All you have to do is exit out of ranish and make sure it is saved. **What about the linux partition?** Well, from my own experience, it is better to leave unused space so linux can partition it how it likes instead of how you want it. It's true, you see in the installation, linux uses a tool called Disk Druid, where it can automatically partition the 4+ partitions needed for linux to work. Besides, isn't it easier to just leave it as unused then making 4+ partitions and then trying to format them? Anyways, back to getting done, you now have to press F2, which saves the MBR. Then hit the esc key and you should be returned to the good old days of DOS. Eject the disk and boot back to Windows. Once in Windows, run a scandisk to make sure that no files were damaged. Also check the latest file you made, such as a word document that you were working on before doing this, if its fine, then you have no damage. Congrats.

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Closing

Congratulations, you have finished the process to dual-boot your computer. Now all you have to do is place the linux install disk in your CD drive and boot to it. You are now on your linux's distrib help instead of mine. Please no, "I can't get my linux to install," sorry but its not my problem (nor do I think I could offer much help either.) If your bios is not set to boot from your cd drive, then go into it with either "del" or "F1" (depending on your BIOS, and WHILE BOOTING!! not just anywhere) and change the boot sequence to boot from CD-ROM drive before your hard drive. If your computer can not boot from the CD drive, then you will have to make a boot disk. I apologize but I have never done this and you will have to do a search online to find a linux boot floppy.

Moving on, if you have any suggestions to improve this manual to better help "newbies" in installing a dual-booted system, then please feel free to email me. I also thank you for keeping my email address free from spam and remember this is a sourceforge.net redirect, any misuse (such as spam) will cause a problem with sourceforge. And if there is any community that you don't want to flame you, sourceforge is one of them. I don't mean to scare you.

```
Ranish Partition Manager          Version 2.40.00          February 08, 2001
-----
Hard Disk 1  38,172 Mbytes [ 4,866 cylinders x 255 heads x 63 sectors ]
Using LBA
#  Type Row  File              Starting      Ending      Partition
#  Type Row  System Type      Cyl Head Sect  Cyl Head Sect  Size [KB]
2  >Pri 1  Windows FAT-32 LBA      0   1   1  2,825 254   63 22,699,813
3  Pri 3  Linux ext2fs          2,826 0   1  2,838 254   63  104,422
4  Pri 4  VFAT Extended LBA     2,839 0   1  4,764 254   63 15,470,595
5  | Log Linux ext2fs     2,839 1   1  4,699 254   63 14,948,451
6  | Ext Extended        4,700 0   1  4,764 254   63  522,112
7  | Log Linux swap      4,700 1   1  4,764 254   63  522,081
8  Pri 2  Hidden FAT-32 LBA     4,765 0   1  4,865 254   63  811,282
9  Pri   Unused         4,866 0   1  4,866  87   21   2,751

ENTER - Start wizard  INS - select file system  DEL - clear record
-----
MBR
# Partition  Size
1> FAT-32    22,167
2 Hid FAT-32    792
3 Linux ext2   101
4 Extended  15,108

Press ENTER to start Partitioning Wizard,
which will guide you through the creation
of new partitions.

F1 Help  F2 Save = F3 Undo = F4 Mode = F5 Disk  ESC Quit
```

This is my current setup with Redhat Fedora Cora 1 installed, as you can see, leaving Disk Druid to repartition is much easier then doing it manually. In fact, ranish can not handle the creation of more then 4 primary partitions. Thanks.