How to Back up Your Computer Before Upgrading to Windows 10

Upgrading a Windows 7 or 8.1 computer to Windows 10 will be easy and take less than an hour for most of us. However, replacing the operating system is a complex upgrade. If something goes wrong, it could leave your hard disk corrupted and the computer unbootable. A full system backup is insurance that you can restore your computer, programs and data in the event of even a major failure.

- **Deciding if you need to make a full system backup**
  1. Do you have important, irreplaceable files on your computer *and nowhere else*? For example, financial records, photos, email addresses, emails, Internet favorites (bookmarks), or installation files and codes for programs you paid for and downloaded?
  2. Do you have programs installed with complex configurations or printers, scanners, Web cams and other hardware which would take a lot of time to reinstall.
  3. Have you lost any of the disks needed to restore your computer to its "as new" condition or to install the programs you use such as Microsoft Office or Quicken? Some computers come with a restore partition on the hard drive instead of disks, but the upgrade may make this unusable.

  If your answer to all three questions is no, and you could live without a computer for a week or two while you order disks and install everything, perhaps you don't need to bother with backups. Otherwise, read on.

- **Full System Backups: General Info** (A full system backup is also called an image backup).
  1. The backup includes everything on your hard drive: all your data plus Windows, programs, printers, scanner, Internet provider settings, email settings, network settings, etc.
  2. The entire backup can be restored to the current hard drive (or a new hard drive) in one step wiping out the current contents and restoring the system to when the backup was made.
  3. Individual folders or files can be restored from the backup if desired.
  4. I recommend the Macrium Reflect backup program as the easiest to use, but Acronis True Image and other products are available. Macrium Reflect has a fully functional free version.
  5. The backup can be saved conveniently on an external USB hard drive.
     a. Seagate, Toshiba and Western Digital are good brands available online and locally at Staples, Office Depot and Best Buy.
     b. A 500GB or one Terabyte drive is a good size and will hold many backups.
     c. A "portable" drive is especially handy since it is small and powered by the USB port so it doesn't require AC power from a wall outlet. Prices range from $70-$100.

- **Download and Install Macrium Reflect**
  1. To download **Macrium Reflect 6 Free** go to: **www.macrium.com/reflectfree.aspx** Scroll down to compare the free and full version ($69.95). The free version is perfect for now.
  2. Click the green **"Download"** button to download the free version.
  3. At the bottom of the browser window, you will see a box with "Do you want to run or save ReflectDL.exe..." Click "**Run**," and the installation of Macrium Reflect will begin.
  4. Accept all the default options to complete the installation of Macrium Reflect.
  5. There will now be a new icon on the Desktop named Reflect with a black and a blue arrow.
  6. Start Macrium Reflect and click the **?** Help icon to read the online Macrium Reflect v6 Users Guide. Unfortunately, this is not a very good source of information, but give it a try.
  7. For a real text book, Leo Notenboom wrote Backing Up with Macrium Reflect, $19.97. **https://store.askleo.com/product/saved-backing-macrium-reflect/**

- **Create and Save the Backup**
  1. Start Macrium Reflect and click "**Yes"** in the User Account Control window.
  2. In Macrium Reflect, click on the line "**Image this disk"** pointed out by the Arrow in the lower right corner of the first screen image on the next page.

3. The "**Select Source Drive and Image Destination**" window will open as shown in the second screen image.
4. Confirm that the box shown by Arrow 1 is checked to select all partitions on your hard drive.
5. The correct drive has a C: partition as shown by Arrow 2.
6. Choose where the backup will be stored by clicking the browse box with the three dots shown by Arrow 3.
7. The "**Browse For Folder**" opens as shown. Click "**This PC**," scroll down to your external hard drive and click on it.
8. Select the folder to store the backup. If you don't have a folder for backups, click the "**Make New Folder**" button and name the folder. When done, click "**OK**," see Arrow 5.
9. To start the backup, click "**Finish**" as shown by Arrow 6.
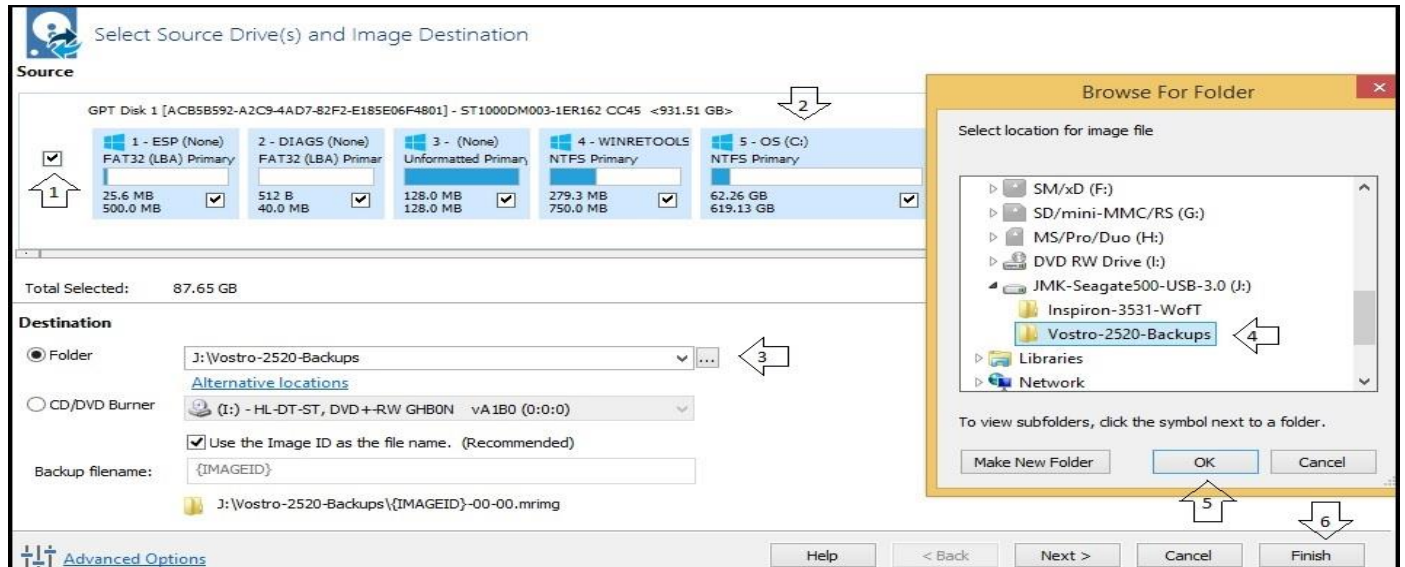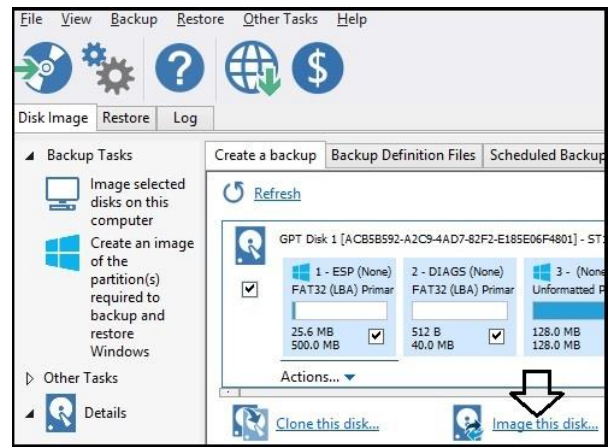
10. The Backup Save Options window opens. Click "**OK**." The progress bars show how long the backup will take.
11. When you see the "**Image Completed Successfully**" window pop up, click "**OK**" to close **it** and then click "**Close**" in the backup progress window.
12. Back in the main window, click the "**Restore**" tab shown in the first screen image on the left.
13. In the **Restore** window, your recent backup will be highlighted. Click "**Verify Image**."
14. In the **Verify** window, click "**Verify**" and wait for the "**Image Verified Successfully**" message. Click "**OK**."

This is the simplest way to create a backup image. You will probably want to use some of the more advanced features. For example, scheduling backups and adding comments to backups. So, check out the references and experiment.

- **Create Bootable Rescue Media to Restore a Backup**
  1. You need a Macrium bootable flash drive or CD to restore a backup. Flash drives perform much faster than CDs and are a better choice. A 4 or 8 GB USB 2 drive is adequate. Sandisk is a good brand.
  2. Plug the flash drive into a USB port and then start Macrium Reflect.
  3. On the menu line, click "**Other Tasks**" and select "**Create Rescue Media**" to start the wizard.
  4. In the "**Rescue Media**" window read the text and press "**Next**."
  5. In the "**Rescue Media Drivers**" window, check that all drivers are available and press "**Next**." If a driver is not available you can add it from your manufacturer's web site or just proceed.
  6. In the "**Prepare Windows PE Image**" window, if you use Bitlocker, check the box "Include optional components – required for iSCSI and Bitlocker support." Otherwise, accept the default settings. Press "**Next**."
  7. In the "**Burn Rescue Media**" window, click "**USB Device**," select your flash drive. Check the "**Enable multiboot MBR/UEFI USB support**" and press "**Finish**."
  8. The files will be copied to the flash drive and the "**Windows PE USB Rescue media successfully created**" window will appear. Click "**OK**."

After you create the bootable media, it is important to boot from it and confirm that both the internal and external drives can be seen. If they are not, you won't be able to restore a backup. Some computers show a message when booting to Press F12 or another key to show boot options, or your computer's manual may have this information. Select your USB drive from the menu of boot devices to start the Macrium Reflect program on the flash drive.

- **Preparing to Boot from Rescue Media**

  This was not in the printed handout from the meeting because of lack of space. However, with electronic copies, we don't have that limitation.

  In order to boot from a rescue flash drive or CD, you need to access the computer's boot menu. Some computers show a message on screen when booting to Press F12 or another key to show boot options. Write down this key so you can be ready to use it when booting. If there's no screen message, your computer's manual may have this information. If you don't have the manual, you may be able to get it from the manufacturer's web site, or email the tech support group and ask them. Often, Googling can find the key to use. Google: the brand of your computer Model number boot menu. For example:
  <div align="center">Dell XPS 8700 boot menu</div>
  When you know the key to use, usually Escape, F2, F7, F12 or Delete, you are ready to test your Macrium Rescue boot media.

- **Booting from the USB Rescue Media**
  1. Start with your computer turned on and running in Windows.
  2. Plug your portable USB hard drive that has your backups into one USB port.
  3. Plug the Macrium Reflect rescue flash drive into another USB port or place the Macrium Reflect rescue CD in your CD/DVD player.
  4. From the **Shutdown** options, click on **Restart**. (Use Restart rather than a power on boot because you are more likely to be successful with Restart.)
  5. Watch for the screen to go **black**.
  6. Immediately, press the **F12 key** (Dell computers) or the appropriate key for your computer **repeatedly and rapidly** making sure you start before the manufacturer's logo screen appears. (If the computer won't boot into Windows, do this.as soon as you turn the computer on.)
  7. If you get it right, the computer will not boot into Windows but will stop with the **boot device menu** on the screen.*
  8. On the Boot Device Menu, click the **USB Storage Device** (the flash drive) or your DVD player.
  9. It takes Macrium Reflect about one min. to boot after the USB drive is pressed on the Boot Options menu (30 sec. of black screen and 20 seconds more to fully load the program). Booting from a CD take a bit longer.
  10. In Macrium Reflect Windows PE, click "**Browse for an image file…**"
  11. The "**Select an image file**" window opens. Click "**This PC**" on the left (or double click "**This PC**" on the right).
  12. **Scroll down** on the right until you see your **USB hard drive** (not your USB flash drive), and click on it and then click "**Open**" (or double click it).
  13. In the USB hard drive locate the folder with your backups and click on it, and then click "**Open**" or (double click it).
  14. Click on the backup you want to restore and click "**Open**" or (double click it).
  15. Select the image and then click on "**Restore Image**."
  16. The "Drag Partitions to the Destination Disk or click Copy selected partitions" window opens.
  17. Select the partitions you want to restore on the image (top).
  18. Click "Copy selected partitions."
  19. Click "**Next**."
  20. In the Restore summary and Progress window, click "**Advanced Options**" at the lower left.
  21. Review the options to see if any would be useful.
      At this point, you have successfully tested your restore media. If you don't intend to actually restore an image **DO NOT** click "**Finish,**" instead, jump to Step 24 and **exit**.

  22. Click "**Finish**" to start the restore.
  23. Note that you can **make backups** from the recovery media version of Macrium Reflect.
      a.   This can be useful for backing up a computer that won't boot so the data can be recovered.
      b.   This can also be used to backup a computer without installing Macrium Reflect.

24. **Click the red X** in the upper right corner to close Macrium Reflect and reboot the computer when you are finished testing your rescue media or have finished the restore.

* Sometimes it is very difficult or impossible get the boot menu to come up and the computer always continues and boots into. This is often the case with computers with a UEFI BIOS, commonly used with Windows 8 and later systems. It may be necessary to enter the UEFI BIOS and disable Secure Boot:
1. In Windows, hold the **Shift key down** while clicking **Restart** from the **Shut down menu.**
2. Upon restarting, you will enter the **Choose an Option** screen.
3. If you see an option to "**Use a device,"** click that.
    a. From the list of devices, select your USB rescue media or your DVD rescue media.
    b. The computer will boot into the Windows PE version of Macrium Reflect.
    c. Continue with Step 10 of the **Booting from the USB Rescue Media** section.
4. If there isn't a "Use a device" option, click **Troubleshoot.**
5. Click **Advanced Options.**
6. Click **UEFI Firmware Settings**.
7. In the UEFI BIOS:
    a. Find the **Secure Boot** setting, and set it to **Disabled**. This option is usually in either the **Security** tab, the **Boot** tab, or the **Authentication** tab.
    b. **Save changes** and exit. The PC will reboot.
8. Repeat the steps in the **Booting from the USB Rescue Media** section.

- **Backing up and restoring BitLocker encrypted disks**

If you have a hard drive that is encrypted by BitLocker, this will be important to you.

BitLocker normally only comes with the Pro version of Windows or higher and not the Home versions. However, some tablets come with BitLocker even with the Home version of Windows. My Asus Transformer is an example of that, and BitLocker was turned on and the hard drive was encrypted without any notice.

When Macrium Reflect makes a backup of the encrypted drive, it sees the drive in its unencrypted form just like any other application running in Windows. Therefore, the backup is NOT encrypted. Care should be taken to store the backups where they will not be a security risk.

If you restore a Macrium Reflect backup of an encrypted disk, the resulting disk will not be encrypted. If you want it encrypted, you will have to tell BitLocker to re-encrypt it. The same would apply to any whole disk encryption scheme e.g. Symantec Disk Encryption, Truecrypt etc