

# BACKING UP YOUR PC

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# Why should you back up?

- Do you have any data that can't be easily recreated?
- If you PC crashes do you want to be back online in minutes instead of hours?
- It's only a matter of time before you have a hardware failure or malware attack.

# Backup “musts”

- It *must* be easy
  - Let’s face it, if it’s not easy or automated you won’t do it.
- It *must* be performed regularly
  - If you create data or email regularly you better put it in a safe place
- It *must* be secure
  - It should be backed up and stored away from the PC
- It *must* be backed up in more than one place
  - Online companies go out of business
  - External hard drives, CDs and DVDs do fail

# Some Definitions

- Data backup
  - This backs up the stuff you create, i.e., documents, pictures, videos and music. Also Favorites, email and on and on.
- Entire hard drive or image backup
  - This backs up Windows and your installed programs (everything)
- Hard drive image
  - An image is a complete bit-for-bit copy of your hard drive
- Types of backup
  - Local – backup to external hard drive or DVD
  - Online – use an Internet service
  - Network – use a NAS box (Networked Attached Storage)

# What should you use?

- Tools built into Windows 7
  - They're good but there are better tools
- 3<sup>rd</sup> party tools
  - Tools for backing up data
  - Tools for backing up entire hard drive

# Backup strategy

- Backup your data often
- Backup your hard drive periodically
- Why should you do this?
  - If your PC crashes you can be back on the air in 10 to 20 minutes. Otherwise, it's hours if at all.
  - If you backup your data weekly, the most you'll lose is a week's worth of data

# Restoring

- When you restore your entire hard drive, you go back in time to last backup.
- That's why you have to backup data frequently.
- After restoring the hard drive you must restore recent data
- Example
  - You backup your hard drive Sept 1<sup>st</sup>
  - March 1<sup>st</sup> your PC crashes
  - If you restore just your hard drive, all data created since Sept 1<sup>st</sup> is lost. If you backup your data frequently, then nothing is lost.

# Compressed versus Uncompressed backups

- Hard drive backups are usually compressed
- Data backups should be uncompressed
  - Allows individual files and folders to be restored at any time
  - Windows Backup uses compression. Individual file restoration not possible



# What do you need?

- External hard drive - \$89 and up
- Hard drive backup software - \$49 or the free Macrium Reflect or Paragon programs
- Or – just use Windows 7 Backup
- Data backup program - \$50 for the best paid one or good free one, Back4Sure at <http://www.ukrebs-software.de/>
- Some time to do it
- Is it worth it?
  - Only you can answer this.

# What do PC manufacturers provide?

- Usually they don't provide a Windows installation disc.
- They often provide recovery media.
  - This recovers your PC to the “as bought” condition.
  - All data and stuff you added is gone.
  - Not a pleasant way to go.
- They also may provide recovery software
  - Usually on a hidden partition.
- Call your manufacturer

# Check your work

- Make a trial data backup with just a few files
- Navigate to the drive where you backed up
- Make sure the files are really there
- Make sure you can restore the files or folders to the original location

# What tools should you use?

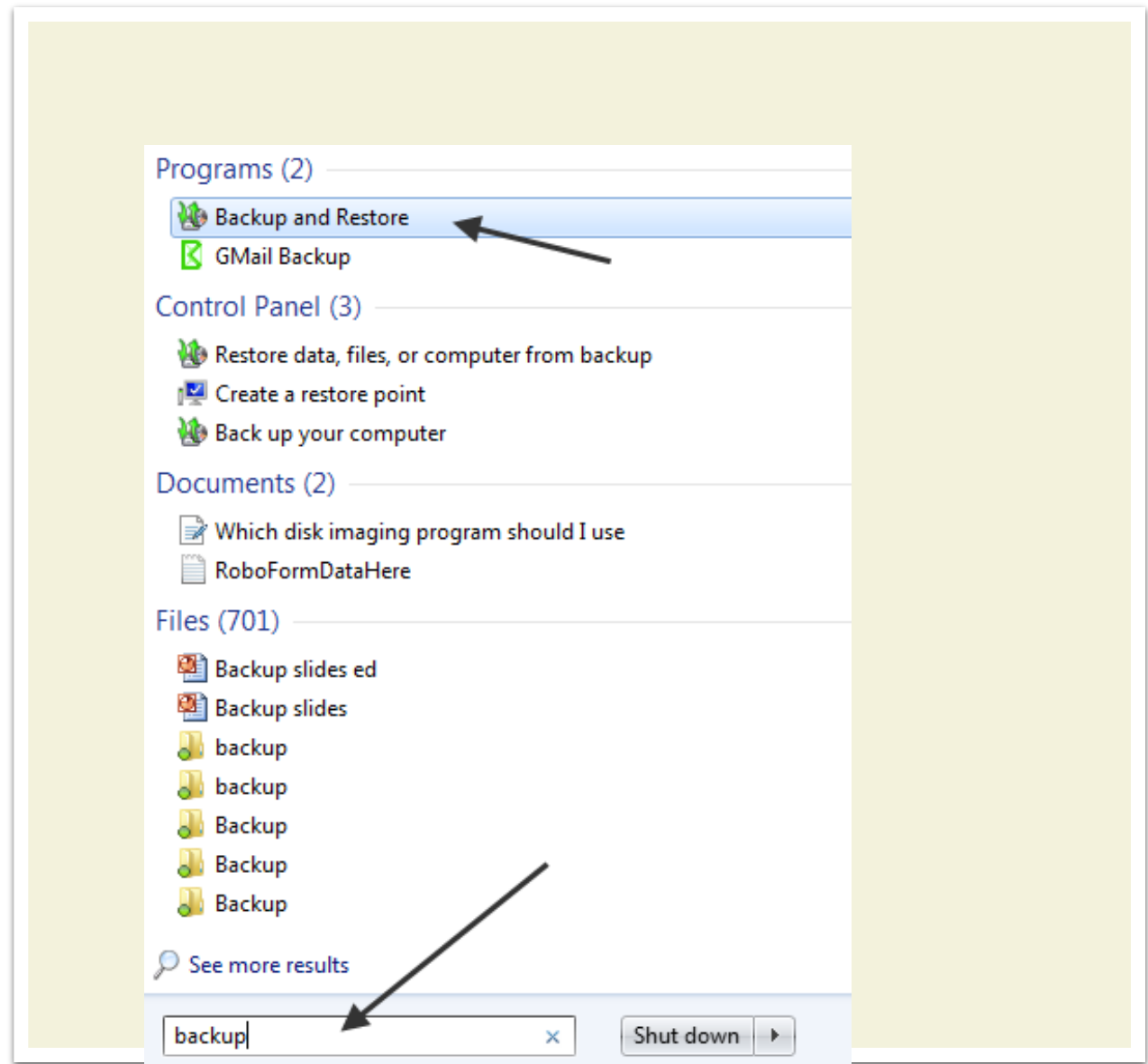
- Hard drive backup software (imaging program)
  - Acronis True Image Home Edition – currently \$49
  - Paragon Disk Manager Free
- Data backup
  - Back4Sure free software
  - Genie Backup Home Addition – currently \$49
  - Software bundled with external hard drive
    - It may or may not do what you want
- External hard drive
  - Western Digital or Seagate
  - Should buy USB 3.0

# Windows Backup tools – part 1

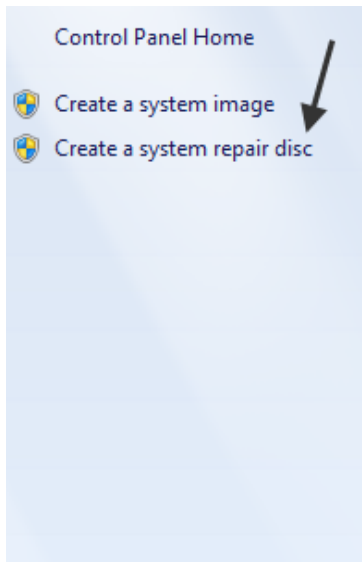
- See online tutorial on Windows 7 Backup at <http://windowssecrets.com/top-story/build-a-complete-windows-7-safety-net/>
- Make sure you have an external hard drive connected
- Click Start and type Backup and select Backup and Restore
- Choose to create system image on the left or backup files on the right
- Remember – you have to create a system repair disk to boot your PC prior to restoring an image
- See next slide

# Windows Backup tools – part 2

After viewing or printing the instructions from the online tutorial you're set to go.



# Windows Backup tools – part 3



## Back up or restore your files

### Backup

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Windows Backup has not been set up.

 [Set up backup](#)

### Restore

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Windows could not find a backup for this computer.

 [Select another backup to restore files from](#)

[Recover system settings or your computer](#)

# Online backup services

- There are several good services
- Some are free up to 5 gigabytes
- Examples
  - Carbonite\*, Mozy\*, Sugarsync\*\* (my favorite)
  - DropBox\* (different then the above)
  - TimelineCloud at [www.timelinecloud.com](http://www.timelinecloud.com)
- Read reviews at <http://bit.ly/backupsites>
- More reviews at <http://bit.ly/backupsites2>

Note      \* indicates that I've tried it

          \*\* indicates my current backup solution



# How much online storage do you need?

- This is what Mozy Home says about 50 GB (\$5.99 per month)
  - 6,250,000 text emails plus
  - 7,500 photos plus
  - 8,500 music files, and
  - 1,000 videos
  - Your results may vary
- **Misc. stats**
  - A full 8 gig memory card can hold 8 gigabytes (surprise)
  - 1000 MP3 songs require 4 gigabytes
  - 10,000 Word or Excel files require 1 gigabyte
  - It's the videos that require a lot of storage
  - If you shoot RAW photos, they require 5 times that of JPGs

# Online companies



Rating: ★★★★★

[Go to Site](#) | [Review](#)

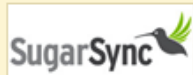
**Bottom line:** Excellent and comprehensive online backup with easy remote file access, exclusive discount



Rating: ★★★★★

[Go to Site](#) | [Review](#)

**Bottom line:** Great low-cost online backup with exclusive discount; can back up external drives



Rating: ★★★★★

[Go to Site](#) | [Review](#)

**Bottom line:** Fun and versatile file backup works with multiple computers; supports music streaming; exclusive discount



Rating: ★★★★★

[Go to Site](#) | [Review](#)

**Bottom line:** Most secure, customizable, streamlined file backup for advanced users



Rating: ★★★★★

[Go to Site](#) | [Review](#)

**Bottom line:** Solid backup with a lot of configurability; no mobile app access or file sharing



Rating: ★★★★★

[Go to Site](#) | [Review](#)

**Bottom line:** Solid online backup with file sharing and the ability to back up to 5 computers, though the interface is not the best



Rating: ★★★★★

[Go to Site](#) | [Review](#)

**Bottom line:** Fast and transparent browser-based backup with file sharing; infrequent backup schedule



Rating: ★★★★★

[Go to Site](#) | [Review](#)

**Bottom line:** Geared towards businesses; Exchange and SQL backups; compliance for financial, medical companies



Rating: ★★★★★

[Go to Site](#) | [Review](#)

**Bottom line:** Packed with features, includes 5 systems and local backup; nice interface; we had some set-up problems



Rating: ★★★★★

[Go to Site](#) | [Review](#)

**Bottom line:** Well-priced solution for file sharing and collaborative work; not true automated backup solution

[Online FAQ](#)

# Other devices you should know about

- ClickFree Transformer at <http://www.clickfree.com/>
- Seagate Replica at <http://www.seagate.com/replica/>
- Back in a Flash at <http://www.backinaflash.com/>
- Rebit external drive at <http://rebit.com/>
- Network Attached Storage (NAS) at <http://bit.ly/nasbox2>
- CMS Backup System at <http://www.cmsproducts.com>
  
- Caution – do a thorough review online before purchasing.

# Are backup programs difficult to learn?

- It takes a little effort and a possible Tech Support call
- Of course you have to suffer a little bit but only once
- The suffering is much worse when you loose precious data or photos or have to reinstall Windows

# Email choice makes a difference

- If you use Internet mail such as Outlook, Outlook Express or Windows Live Mail you will have to backup Address Book and email messages.
- If you use Web mail you don't need to backup your email, ever. Gmail or Yahoo are examples.

# Various media types

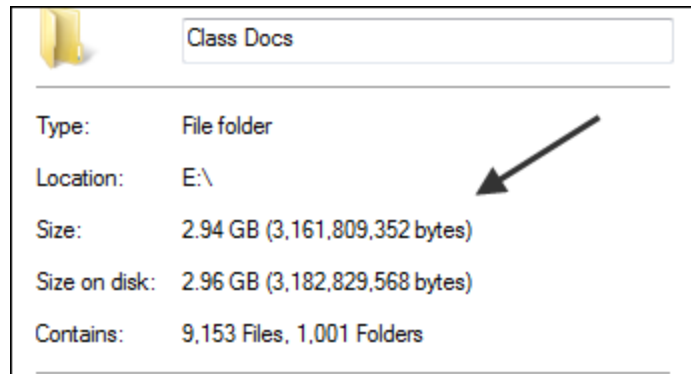
- Assume you have 4 Giga Bytes memory cards to backup

Media type	Number of cards	Cost/Card
CD	0.2	\$1.00 (need 5 CDs)
DVD	1	\$.50
DVD Dual Layer	2	\$.25 <sup>1</sup>
Blu-ray Disc	6	\$.20 <sup>2</sup>
500 GB External Drive	125	\$.60 <sup>3,4</sup>

1. All disc costs based on Amazon prices
2. Blu-ray writer costs \$69 to \$89 dollars
3. External hard drive costs \$69 to \$89 dollars
4. You pay for convenience and speed

# How to tell how much data you have

- Navigate to a folder you want to backup
- Right-click it and select Properties
- You will be shown the size of the folder and its subfolders as shown below. In this case it's 3 GB



# What I did with new PC

- Bought new HP desktop PC
- Backed up entire PC with Shadow Protect imaging software to external hard drive (storagecraft.com)
  - Could have used Windows 7 Backup – just click Start and type backup and select Backup and Restore at the top.
- I also created a set of Restore DVDs using the HP program. ***I will never use these.***



# What I did cont.

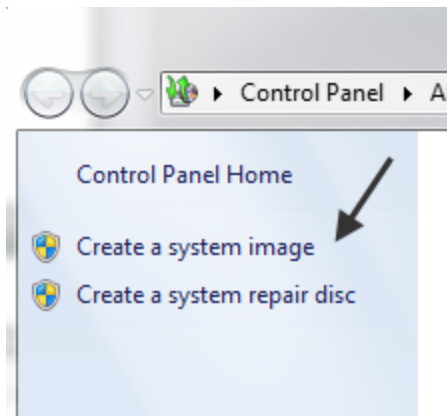
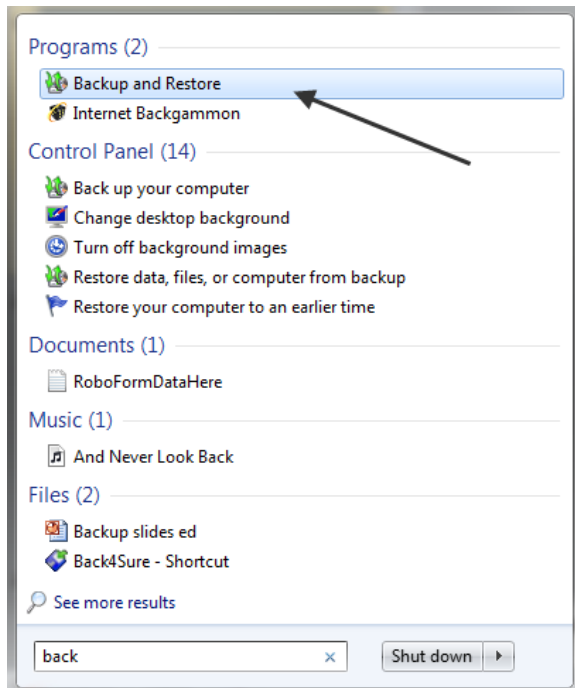
- Repartitioned my hard drive
- I then set up my desktop, installed Antivirus software
- Next, I installed all my programs
- Then, I made another backup
- I was now ready to use my PC knowing that I could restore it at any time
- I clicked Start and entered diskmgmt.msc to examine my hard drive
  - Saw Recovery partition – see Figure 4.

# What else I did

- Found out that pressing F11 key during startup opened HP Recovery Manager. This allows me to restore PC to factory conditions. ***I hope to never use this.***

# Backup Figure 1

- Figure 1 – I selected Backup and Restore and on the next window, I selected Create a system image. Save image to external hard drive.



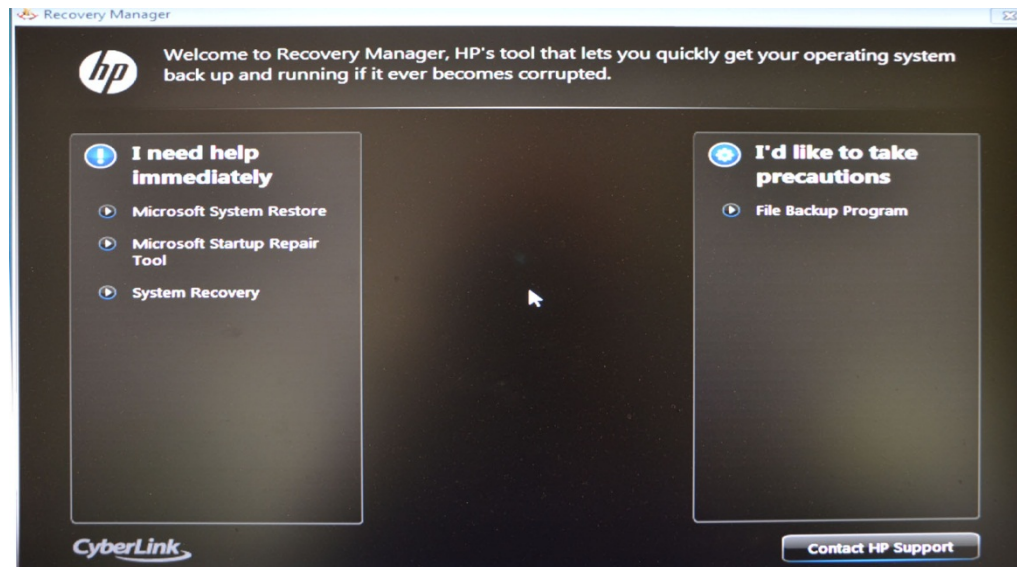
# Backup Figure 2

- Figure 2 - I clicked Start, All Programs, HP, Recovery Manager. Your PC may vary.



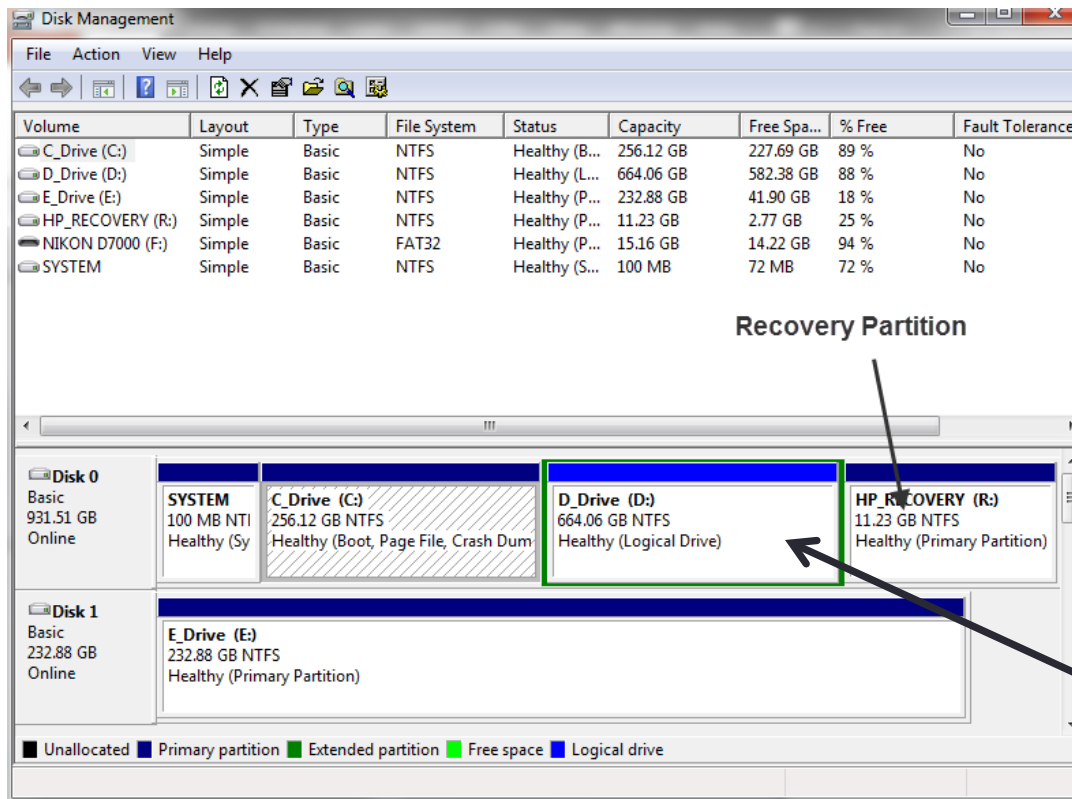
# Backup Figure 3

- HP Recovery bootup



# Backup Figure 4

- Clicked Start – and entered diskmgmt.msc.



Notice that my hard drive is partitioned into two drives, C and D

# Recovering data from a crashed PC

- Method 1
  - Connect hard drive directly to another PC
  - Search Google for IDE/SATA USB Adapter less than \$20
- Method 2
  - Use a recovery CD
    - Paragon Rescue Kit Free at <http://www.paragon-software.com/home/rk-express/download.html>
    - LiveCD from [www.livecd.com](http://www.livecd.com) for \$79.95
    - Requires use of external hard drive to save data

# Consequences of not backing up

- Precious data could be lost forever
- You may have to reinstall Windows, see link [here](#)
- You may have to restore PC to original condition and perform the following (several hours)
  - Restore data
  - Install and update Anti Virus
  - Update Windows
  - Install all of your applications
  - Install any utilities such as Adobe Reader, etc.
  - Redo any Windows settings
  - Setup your email



# Warning

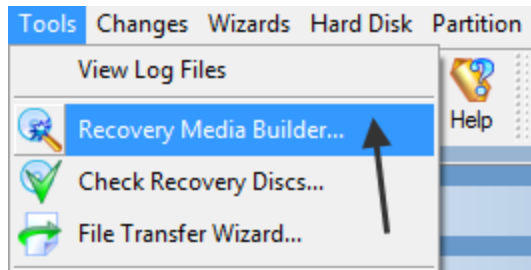
- Here's what Microsoft states
  - When you restore your computer from a Windows Complete PC Backup image, it is a complete restoration. You can't choose individual items to restore, and all of your current programs, system settings, and files are replaced. No fun.
  - This is also true if you use manufacturer's Recovery Media
- But – if your image is recent since you created it yourself – no problem

# Obtaining the free Paragon Backup part 1

- Download Paragon Backup & Recovery Free from <http://www.paragon-software.com/home/br-free/>
- The download file is named Br\_free.msi
- After downloading the file, double click it to install the software. Be sure to click the Register button and you will then register the software, it's free. You will then get an email with the registration data.
- Next, run the program and click the Advanced button in the lower left

## Obtaining the free Paragon Backup part 2

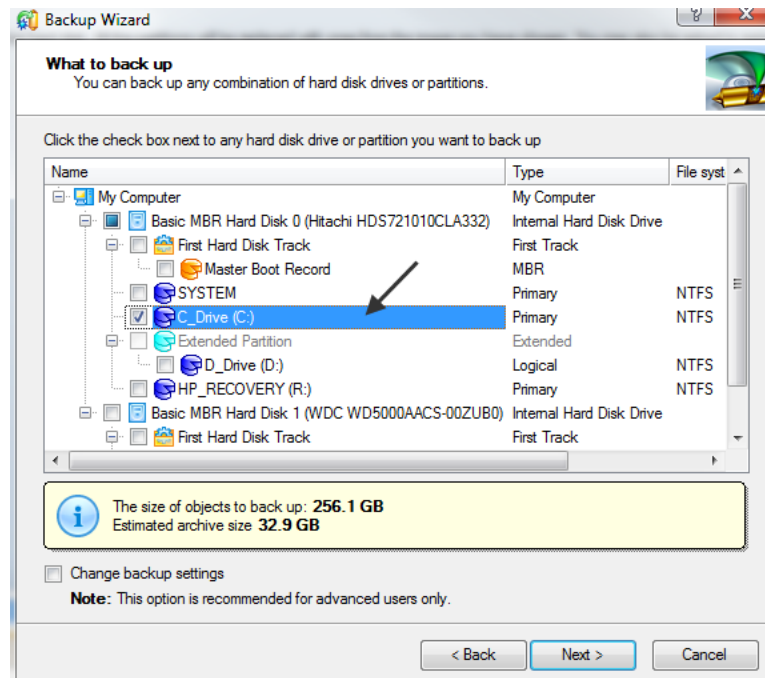
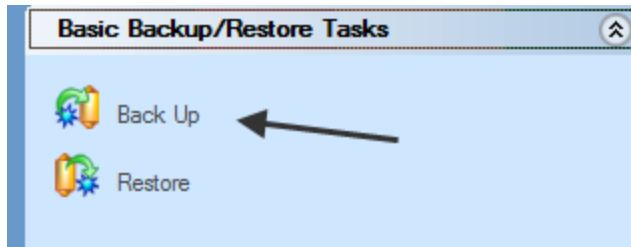
- Select Tools, Recovery Media Builder as shown below to create the bootable Recovery CD.



- Place a blank CD in your CD player/burner and follow the instructions
- Put the CD in a safe place

# Obtaining the free Paragon Backup part 3

- To create an image of your hard drive boot from the Recovery CD
- Select Backup and on the next window select your C drive and click Next.



## Obtaining the free Paragon Backup part 4

- You'll then be asked to select a backup drive where you can choose a location on your external hard drive.
- If you should ever need to restore your PC, boot from the recovery CD and choose Restore.
- The help manual is available at Paragon's web site. Select User Manual on the left.
- Should you need help, call Paragon at 1-888-347-5462. Start with the Sales department before asking for Tech Support.

## Advanced - Making backup/restore easier

- Repartition your hard drive so that you have a C drive and a D drive (it may be a letter other than D)
- Now store all data on that partition including
  - Pictures, documents, etc.
  - Email if appropriate (Windows Live Mail or Outlook)
  - iTunes library
  - Any other similar data
- This will leave all of the data alone if you need to restore your hard drive.
- Also, you can backup and restore images or data on the D drive in addition to external hard drives.

# My biased opinion

- Don't use the Dell Data Safe or Dell Backup or HP's programs
- Don't worry about creating Restore Media (CDs and DVDs)
- After you get your PC running you'll create a backup image with the Paragon software or other imaging software. All you need to get started is a blank CD, imaging software and an external hard drive.
- Do this at least every 3 months. You can discard image files that are 6 months old.
- Back up your data to the same external hard drive weekly with Back4Sure available at <http://www.ukrebs-software.de/> for free.
- You're now safely backed up.

# One example of what can go wrong

- You own an iPad and have downloaded several or many apps
- Your hard crashes
- You haven't moved the iTunes to your D drive
- You have a lot of work to do to get back to where you were
- No so if iTunes is moved to another drive



# Conclusions part 1

- If you have anything worth saving – back it up
- It doesn't matter how – just do something
- The only safe backup is at least 3 copies
  - External hard drives do fail, so do CDs and DVDs
- One local backup and one online backup makes sense. Redundancy is the key.

# Conclusions part 2

- Purchase an external hard drive
- Get your PC the way you want it
- Create a disk image
  - Use Windows 7 tool or Acronis True Image or Paragon Free
- Backup your data
  - Use Windows Backup or use free Back4Sure
- Consider online backup for free for double protection
- Partition your hard drive for maximum flexibility

# Resources

- Go to my web site at [www.edwardns.com](http://www.edwardns.com)
  - Click Courses, Windows 7
  - See section labeled Backing up and Recovery
- On-line article at <http://bit.ly/backingup7>
- Free backup software at <http://bit.ly/freebackupsw>
- Free paragon program at <http://bit.ly/paragonfree>
- How to build a Windows safety net at <http://bit.ly/w7safetynet>
- Checklist for backing up at <http://edwardns.com/blog/checklist-for-backing-up>
- Backup Windows Live Mail at <http://bit.ly/bulivemail>
- Best free CD/DVD burning software at <http://cdburnerxp.se/en/home>
- Cybercafe backup article at <http://bit.ly/scbackup>