Backing Up Your Computer
Presenter: Neil Higgins
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What happens on July 28, 2016?

July 2016 (USA)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1	2
3	4 Independence Day	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

That is the last day to upgrade to Windows 10 for free
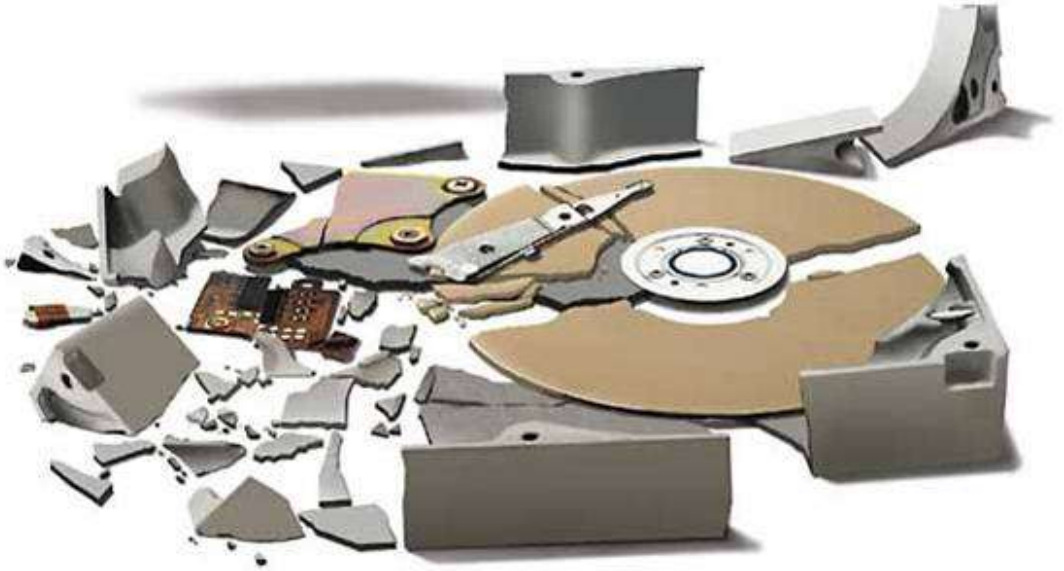
A couple of questions

- Who has already upgraded to Windows 10?

- Do you like it?

- *AND* did you make a complete system backup before you did the Windows 10 free upgrade?

- What if you want to go back?
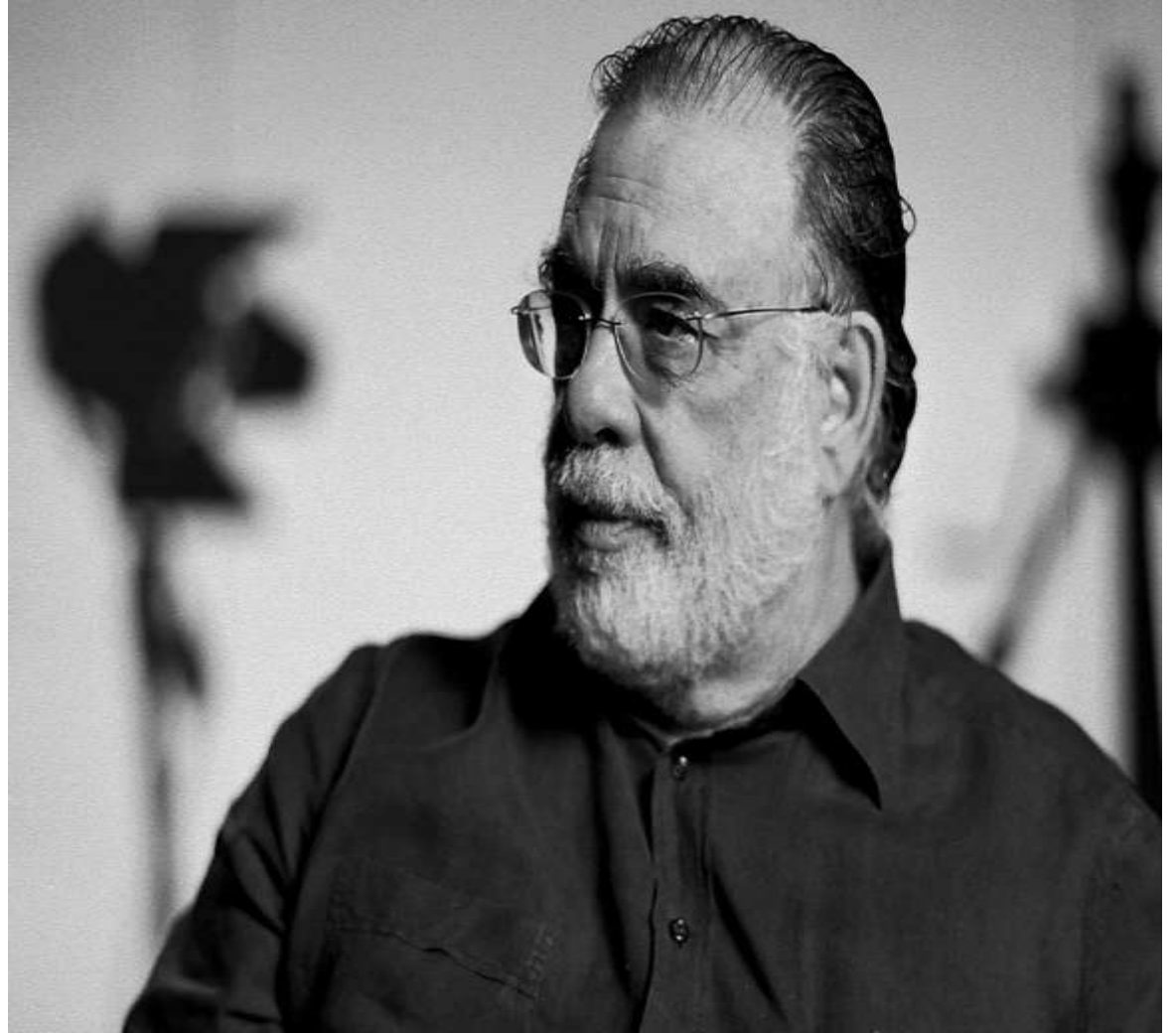
Types of Backups

- **<u>Incremental Backup-</u>** A security copy that contains only those files that have been altered since the last full backup.
- **<u>Differential Backup-</u>** A differential backup is a cumulative backup of all changes made since the last full backup, i.e., the differences since the last full backup. The advantage to this is the quicker recovery time, requiring only a full backup and the last differential backup to restore the entire data repository.
- **<u>System Backup-</u>** A system backup is the process of backing up the operating system, files and system-specific useful/essential data.
- Backup is a process in which the state, files and data of a computer system are duplicated to be used as a backup or data substitute when the primary system data is corrupted, deleted or lost.
- We will discuss System Backups today. The two other types of backups will not be useful to us if we need a complete full restore of a prior operating system.

Backups and Physical Security

When was the last time you backed up your computer?

Who is this guy?

Here is a hint.

Francis Ford Coppola

Director, producer and screenwriter. Godfather Movies, Apocalypse Now, Patton and Many Others.

Did an excellent job of backing up his work from a laptop to an external storage drive.

Until his house was broken into and his laptop and backup drive were stolen.

Losing <u>twenty years</u> of his creative work.

Backup Hardware Solutions

- Backing up to the hard drive of your computer. Good idea? Partly.

- USB "Thumb" Drive- Too Small for Our Purposes

- DVDs? Probably Not!

- External Hard Drive- YES!

Prices on Bestbuy.com as of 02/29/2016

- **SanDisk Cruzer 8GB USB 2.0 Flash Drive - Black $4.99**
- **SanDisk Cruzer 16GB USB 2.0 Flash Drive - Black $5.99**
- **SanDisk Cruzer 32GB USB 2.0 Flash Drive - Black $8.99**
- **SanDisk Cruzer 64GB USB 2.0 Flash Drive - Black $14.99**
- **SanDisk Ultra 128GB USB 3.0 Flash Drive - Black $27.99**

- **Toshiba Canvio Basics 1TB External USB 3.0 Portable Hard Drive $59.99**
- **Toshiba Canvio Basics 2TB External USB 3.0 Portable Hard Drive $84.99**

What about the "Cloud"?

Can be expensive, and needs Internet access most (all?) of the time. Most secure physically(?)

If you have a Microsoft Account, or a Google Account/Email, _each one_ gives you 15 GB (fifteen Gigabytes). FOR FREE!

15 GB will store about 3750 songs or almost two million pages of text.

Three programs were tested for this presentation

AOEMI Backupper Standard

EaseUS Todo Backup Free

Macrium Reflect
(3.5MB Installer file, took a LONG time to download the 571.1 MB program).

What is already available in Windows?

Go to Control Panel >

File History >

System Image Backup >

Next you can choose to:

Create a System Image or

Create a System Repair Disk
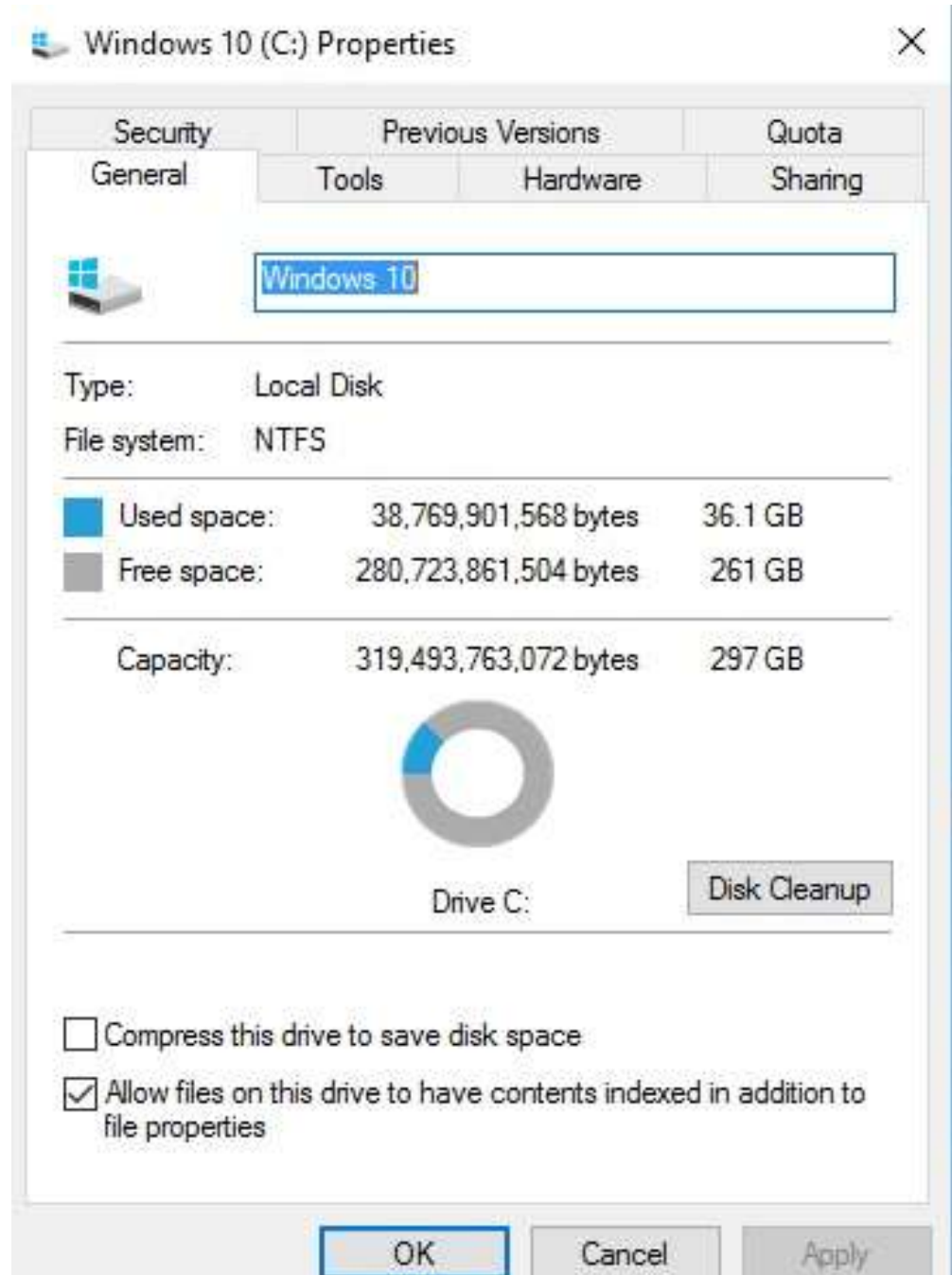
See the article from HowtoGeek in the web links.

The three programs were installed on this computer-

Acer Model 5742-7620 Laptop

Windows 10- 64 Bit

4GB Memory.

Windows 10 (C:) Properties

Security	Previous Versions	Quota
General	Tools	Hardware	Sharing

Windows 10

Type: Local Disk
File system: NTFS

■	Used space:	38,769,901,568 bytes	36.1 GB
■	Free space:	280,723,861,504 bytes	261 GB

Capacity: 319,493,763,072 bytes   297 GB

Drive C: Disk Cleanup

☐ Compress this drive to save disk space
☑ Allow files on this drive to have contents indexed in addition to file properties

OK   Cancel   Apply

An external hard drive was the backup destination-

Toshiba Canvio Basics 1TB External USB 3.0 Portable Hard Drive.

Let's Take a Quick Look at Each Program.

Backup run Times

Program Name	Program Estimated Time Mins		Start Time	End Time	Actual Time in Mins
AOMEI Backupper Standard	13		11:02	11:16	0:14
EaseUS Todo Backup Free Edition	7		11:41	11:56	0:15
Macrium Reflect Free Edition	15		12:28	12:45	0:17
16:35 per the program					

What about a disaster? Or you want to go back?

- **Bare-Metal Restore-** Bare-metal restore is a technique in the field of data recovery and restoration where the backed up data is available in a form which allows one to restore a computer system from "bare metal", i.e. without any requirements as to previously installed software or operating system.

- This is the type of restore you would need to do if your hard drive failed mechanically, or if you wanted to restore a prior operating system.

A "Bare Metal" Restore was performed.

First, ***all files*** were completely destroyed on the C: drive using the KillDisk utility.

The full drive erase (297GB) took 1 hr 15 min. 22 sec.

EaseUS Todo Backup Was Used to Perform the Drive Restore

- The Toshiba external hard drive was connected, and the system was booted from the EaseUS Emergency Disk (CD) that was created after the program was installed.

- The time to restore the full 297 GB Partition With 36.1 GB of data was 35:19.

- Disconnected the external drive, ejected the CD, then rebooted. Success!

Each program has good features

Windows System Image backup is OK.

AOMEI and EaseUS Created restore CDs that are Linux based (Linux to restore Windows?).

Macrium Reflect created a Win PE (Preboot Environment) CD. LOTS of features, maybe a *little* too much for a new user.

Both EaseUS and Macrium backups can be browsed like a regular drive, to copy and restore files. AOMEI did not do this.

Thank you for your attention.

Questions?

Your Input?

Web Links

What is a system image?
http://windows.microsoft.com/en-us/windows7/what-is-a-system-image

How to Create a System Image in Windows 7, 8, or 10
http://www.howtogeek.com/howto/4241/how-to-create-a-system-image-in-windows-7/

AOMEI Backupper Standard
http://www.backup-utility.com/

EaseUS Todo Backup Free
http://www.todo-backup.com/download/

Macrium Reflect Free Edition
http://www.macrium.com/reflectfree.aspx

DataNumen Disk Image- another free disk imaging tool (not tested for this presentation).
https://www.datanumen.com/disk-image/

 Majorgeeks- the site I use for most of my freeware downloads. Programs are tested for quality and to make sure there is no malware or add-on junk. Programs that include adware are noted.
http://www.majorgeeks.com/

Web Links Continued

Create a System Repair Disk for Windows 7.

http://windows.microsoft.com/en-us/windows7/create-a-system-repair-disc

What Happens to My Free Windows 10 Upgrade After 29 July 2016 if I Need to Change Hardware.

http://winsupersite.com/windows-10/what-happens-my-free-windows-10-upgrade-after-29-july-2016-if-i-need-change-hardware

Microsoft Upgrade to Windows 10 FAQ.

http://windows.microsoft.com/en-us/windows-10/upgrade-to-windows-10-faq

Microsoft Activation in Windows 10.

http://windows.microsoft.com/en-us/windows-10/activation-in-windows-10

Microsoft Windows 10 Recovery Options.

http://windows.microsoft.com/en-us/windows-10/windows-10-recovery-options

How to Create a Windows 10 Recover Disk.

http://www.techradar.com/us/how-to/software/operating-systems/how-to-create-a-windows-10-recovery-disk-1302377