## 1-RECOVERING DATA FROM A DRIVE

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# Web location for this presentation:

http://aztcs.apcug.org Then click on "Meeting Notes"

## SUMMARY

To recover data from a failed hard drive, you should start with lowrisk, less invasive procedures first, followed by increasingly aggressive, higher risk and cost procedures.

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## TOPICS

- Initial Advice for Recovering Data from Drives
  - Big Steps for Recovering Data
  - Details of the Big Steps

## INITIAL ADVICE FOR A FAILED HARD DRIVE IN A "WINDOWS.." COMPUTER:

- ..it is best to click on "Scan and fix (recommended) if "Windows.." asks you to do so
- Click on "Cancel" if Windows.. asks you to "Initialize disk.."

## IF YOU AN UNEXPECTED POP-UP BOX ASKS YOU IF YOU WANT TO SCAN AND FIX A DRIVE..

Click on "..scan and fix.." if Windows.. asks you to

#### Microsoft Windows

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#### Do you want to scan and fix USB Drive (F:)?

There might be a problem with some files on this device or disc. This can happen if you remove the device or disc before all files have been written to it.

#### → Scan and fix (recommended)

This will prevent future problems when copying files to this device or disc.

#### $\rightarrow$ Continue without scanning

#### Microsoft Windows

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#### Do you want to scan and fix USB Drive (F:)?

There might be a problem with some files on this device or disc. This can happen if you remove the device or disc before all files have been written to it.

#### → Scan and fix (recommended)

This will prevent future problems when copying files to this device or disc.

#### → Continue without scanning

## IF YOU AN UNEXPECTED POP-UP BOX ASKS YOU IF YOU WANT TO SCAN AND FIX A DRIVE..

Reference for the previous slide <u>https://7datarecovery.com/blog/ther</u> <u>e-is-a-problem-with-this-drive/</u> IF YOU AN UNEXPECTED POP-UP BOX ASKS YOU IF YOU WANT TO "INITIALIZE" A DRIVE..

..always click on "Cancel" unless you have just inserted an unformatted drive into a USB port

#### Initialize Disk

You must initialize a disk before Logical Disk Manager can access it.

Select disks:

🗹 Disk 0

Use the following partition style for the selected disks:

- MBR (Master Boot Record)
- O GPT (GUID Partition Table)

Note: The GPT partition style is not recognized by all previous versions of Windows. It is recommended for disks larger than 2TB, or disks used on Itanium-based computers.



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## BIG STEPS TO RECOVER DATA FROM A DRIVE

- STEP 100: PRESS AND HOLD DOWN ON THE POWER BUTTON OF THE COMPUTER UNTIL THE COMPUTER POWERS DOWN
- STEP 200: PHYSICALLY REMOVE THE PROBLEMATIC DRIVE FROM THE COMPUTER

## BIG STEPS TO RECOVER DATA FROM A DRIVE (continued)

- STEP 300: ATTACH THE PROBLEMATIC DRIVE TO A "KNOWN-GOOD" "WINDOWS.." COMPUTER USING A USB ADAPTER: Then run "Disk Error Checking" and "chkdsk"
  - STEP 400: ATTACH THE PROBLEMATIC DRIVE TO A "KNOWN-GOOD" "Linux" COMPUTER USING A USB ADAPTER: Then run "GParted".

## BIG STEPS TO RECOVER DATA FROM A DRIVE (continued)

- STEP 500: RE-ATTACH THE PROBLEMATIC DRIVE TO A KNOW-GOOD "WINDOWS.." COMPUTER: RUN "RECUVA" AND "DISK DRILL"
- STEP 600: CONTACT A "CLEAN-ROOM RECOVERY SERVICE" FOR NOT-FREE REMOTE AND CLEAN ROOM ASSISTANCE

## STEP 100: PRESS AND HOLD DOWN ON THE POWER BUTTON OF THE COMPUTER UNTIL THE COMPUTER POWERS DOWN

- ..for a problematic hard drive inside a "Windows 7" or "Windows 8" or "Windows 10" or "Windows 11" computer
- If the problematic hard drive resides inside a "Windows XP" or "Windows Vista" computer, do not press the power button!!--->instead disconnect the AC power cord to turn off the computer

## STEP 200: PHYSICALLY REMOVE THE FAILED DRIVE FROM THE COMPUTER

- To open a specific model of computer, you can usually search the Internet to locate the manufacturer's instructions or a "how-to" video at youtube.com
- Spinning hard drives usually require a short #1 Phillips screwdriver
- M.2 SSDs usually require a jewellers' Phillips screwdriver and a wad of Scotch tape

## STEP 200: REMOVE FAILED DRIVE FROM THE COMPUTER (continued)

For every minute that you leave a failed hard drive running with it's original operating system (Windows.., macOS, or ..Linux..), the operating system will overwrite more and more supposedly "free space" on the drive and less and less of the "clusters" that were part of the problematic data files will be recoverable

## STEP 200: REMOVE FAILED DRIVE FROM THE COMPUTER (continued)

For "Windows 7" and earlier versions of "Windows..", you could leave the "Windows.." operating system on a problematic hard drive still running and still recover lots of data files from the drive. However, for "Windows 11" and "Windows 10", this is no longer true and these two operating systems rapidly overwrite the "available" clusters on the drive, making them unrecoverable, if you leave them running. 19

STEP 300: ATTACH THE FAILED DRIVE TO A "KNOWN-GOOD" "WINDOWS.." COMPUTER USING A USB ADAPTER: Then run "Disk Error Checking" and "chkdsk"

If the problematic drive has a copy of a "Windows 10" or "Windows 11" on it, using a USB adapter instead of a SATA data cable insures that you will not accidently boot up the operating system that resides on the problematic drive since "Windows 10" or "Windows 11" will not boot from a USB-attached drive 20

STEP 300: ATTACH THE FAILED DRIVE TO A "KNOWN-GOOD" "WINDOWS.." COMPUTER USING A USB ADAPTER: then run "Disk Error Checking" and "chkdsk" (continued)

If you attach the problematic drive to a known-good computer that is not the same as the one that the problematic computer originally resided in, you eliminate the possibility that some hardware issue in the original computer caused the data loss in the problematic drive

STEP 300: ATTACH THE FAILED DRIVE TO A "KNOWN-GOOD" "WINDOWS.." COMPUTER USING A USB ADAPTER: then run "Disk Error Checking" and "chkdsk" (continued)

 Some corrupted drives that are consistently "missing" data files when attached to a SATA data cable when attached to the original computer, will then display their data files intermittently when attached by means of a USB adapter.

--->Connecting a problematic hard drive to a USB adapter seems to increase the chances of recovering data files.<sup>22</sup> STEP 300: ATTACH THE FAILED DRIVE TO A "KNOWN-GOOD" "WINDOWS.." COMPUTER USING A USB ADAPTER: then run "Disk Error Checking" and "chkdsk" (continued)

- Information on hardware devices for attaching a drive to a "known-good" computer via USB, please see
- <u>https://aztcs.apcug.org/meeting\_notes/</u> <u>winhardsig/harddrives/recover-data/2-</u> <u>USB-adapters-to-connect-drive.pdf</u>

STEP 300: ATTACH THE FAILED DRIVE TO A "KNOWN-GOOD" "WINDOWS.." COMPUTER USING A USB ADAPTER: then run "Error Checking" and "chkdsk" (continued)

 To run Windows' "Error Checking", see <u>https://www.majorgeeks.com/content/p</u> <u>age/how to use disk error checking.ht</u> <u>ml</u> STEP 300: ATTACH THE FAILED DRIVE TO A "KNOWN-GOOD" "WINDOWS.." COMPUTER USING A USB ADAPTER: then run "Error Checking" and "chkdsk" (continued)

 To run Windows' "chkdsk", see <u>https://www.geeksinphoenix.com/blog/</u> <u>post/2021/12/02/how-to-check-your-</u> <u>drive-for-errors-in-windows-11</u> and <u>https://www.minitool.com/data-</u> recovery/chkdsk-f-or-r.html

Alternatively, you can boot up your existing computer (the one with the problematic hard drive) by booting it up with a "GParted Live" CD or DVD or USB flash drive which has a bootable copy of ..Linux.. in it as explained at https://gparted.org/livecd.php and

https://gparted.org/download.php

 After connecting the problematic drive to starting up your "Linux" computer via a USB adapter, start up the "GParted" app.





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Screenshot Terminal

**GParted Screen resolution Web Browser** 



Network config









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Click on the drop-down list arrow of the drive selector:

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 Click on the problematic drive in the drop-down list:

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Partition	File System	Label	Size	Used	Unused	Flags
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/dev/sda3	ntfs	FACTORY_IMAGE	11.17 GiB	9.67 GiB	1.50 GiB	
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 The partitions of the problematic drive will now be displayed in the "partitions list":

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/dev/sda1         ntfs Beckys-HP         585.00 GiB         78.60 GiB         506.40 GiB boot           /dev/sda3         ntfs FACTORY_IMAGE         11.17 GiB         9.67 GiB         1.50 GiB	Partition	File System	Label	Size	Used	Unused	Flag
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Click on the partition that contains the problematic data files:

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The partition that contains the problematic data files will now be highlighted:

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	Partition	File System	Label	Size	Used	Unused	Flags
	/dev/sda1	ntfs	Beckys-HP	585.00 GiB	78.60 GiB	506.40 GiB	boot
	/dev/sda3	ntfs	FACTORY_IMAGE	11.17 GiB	9.67 GiB	1.50 GiB	
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0 operations pending

Click on "Device" in the top pull-down menu:

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	Partition	File System	Label	Size	Used	Unused	Flags
	/dev/sdal	ntfs	Beckys-HP	585.00 GiB	78.60 GiB	506.40 GiB	boot
	/dev/sda3	ntfs	FACTORY_IMAGE	11.17 GiB	9.67 GiB	1.50 GiB	
	unallocated	unallocated		2.49 MiB			

• A sub-menu will be displayed:

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Partition	File System	Label	Size	Used	Unused	Flags
/dev/sda1	ntfs	Beckys-HP	585.00 GiB	78.60 GiB	506.40 GiB	boot
/dev/sda3	ntfs	FACTORY_IMAGE	11.17 GiB	9.67 GiB	1.50 GiB	
unallocated	unallocated		2.49 MiB			
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 Click on "Attempt Data Rescue" in the sub-menu:

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 A "Search for file systems on.." pop-up box will be displayed:

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			/dev/sda1 585.00 GiB			
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/dev/sdal	ntfs	Beckys-HP	585.00 GiB	78.60 GiB	506.40 GiB	boot
/dev/sda3 unallocated	A full of The sci After th data to Do you	FACTORY_IMAGE Search for lisk scan is needed an might take a ve ne scan you can m o other media. I want to continue Cancel	11.17 GiB Unnamed r file systems d to find file system ery long time. ount any discovere	9.67 GiB on /dev/sda ns. ed file systems and OK	1.50 GiB	
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• Click on "OK" in the "Search for file systems on.." pop-up box:

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/dev/sda1	ntfs	Beckys-HP	585.00 GiB	78.60 GiB	506.40 Gil	B boot				
/dev/sda3	ntfs	FACTORY_IMAGE	11.17 GiB	9.67 GiB	1.50 Gil	В				
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	Search for file systems on /dev/sda         A full disk scan is needed to find file systems.         The scan might take a very long time.         After the scan you can mount any discovered file systems and copy the data to other media.         Do you want to continue?         Cancel       OK									
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 After it scans the problematic drive for a while, "GParted" will either restore it fully, restore it partially, or fail to restore it.

If "GParted" restores the problematic drive, copy to the restored data files to a known-good hard drive using either Linux or Windows..

If "GParted" restores the problematic drive partially, follow the instructions at https://subscription.packtpub.com/book /hardware-&creative/9781849519823/1/ch01lvl1sec2 4/rescuing+data+from+a+lost+partition+( become+an+expert)

STEP 500: RE-ATTACH THE PROBLEMATIC DRIVE TO A KNOW-GOOD "WINDOWS.." COMPUTER USING A USB ADAPTER: RUN "RECUVA", ETC.

"Recuva" is a portable program at <u>https://www.ccleaner.com/recuva</u>

STEP 500: RE-ATTACH THE PROBLEMATIC DRIVE TO A KNOW-GOOD "WINDOWS.." COMPUTER USING A USB ADAPTER: RUN "RECUVA", ETC. (continued)

"Disk Drill" is a not-portable program at <u>https://www.cleverfiles.com/disk-</u> <u>drill-windows-pro.html</u> STEP 500: RE-ATTACH THE PROBLEMATIC DRIVE TO A KNOW-GOOD "WINDOWS.." COMPUTER USING A USB ADAPTER: RUN "RECUVA", ETC. (continued)

 Additional free apps for recovering data files are available at <u>https://www.handyrecovery.com/best</u> <u>-open-source-data-recovery-software/</u>