FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY

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SEMESTER 1

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Data Recovery Tools

Losing data can be awful experience and it is very likely to happen. Data loss can be very costly to anyone. It could be simply a case of accidentally deleting the wrong file or total hard-drive failure. There are many data recovery tools in the market today, some are free, and some are paid. They also come with many features as they are many types of data recovery ranging from hard-drive/partition recovery, USB drive, SD card, deleted data from recycle bin and etc. Below are the three tools we choose for this assessment.

Data recovery can be defined as a process of obtaining the information located on a storage device that cannot be accessed by the standard means due to its previous deletion or certain damage to the digital medium. Different approaches are used to regain the missing files. In general, data recovery techniques are divided into two types: software-based and ones involving the repair or replacement of the damaged hardware components in a laboratory setting. A software-based approach is employed in most cases and involves the use of specialized utilities able to interpret the logical structure of the problem storage, read out the required data and deliver it to the user in a usable form for further copying.

The information remaining on an intact storage can usually be recovered without professional help by means of data specialized software. However, it is important to keep in mind that no information is recoverable after being overwritten. For this reason, nothing should be written to the storage until the last file from it is rescued.

PC INSPECTOR FILE RECOVERY

INTRODUCTION

Convar's PC Inspector File Recovery is a freeware programme. It is free to use and can be used by commercial clients indefinitely. It is designed to recover a variety of deleted or lost files, including those with missing header entries, and can run in the background. However, the software is only compatible with Windows computers. Furthermore, it cannot be installed on the drive you wish to scan. This may be difficult if you're using a computer with only one drive installed.

The PC Inspector File Recovery programme does not have the most powerful features we've seen, but it's not bad for a free programme. To begin, it supports the FAT 12/16/32 and NTFS file systems. It's intended to recover files that contain as much original data as possible, such as names and time and date stamps. Furthermore, partitions can be found automatically when using PC Inspector File Recovery, even if data is missing. Files recovered can be saved to network drives, and the programme is compatible with external hard drives and USB sticks.

INSTALLATION AND DEMO MANUAL

- Go to https://download.cnet.com/PC-Inspector-File-Recovery/3000-2248_4-10118663.html and click Download Now to download the setup.
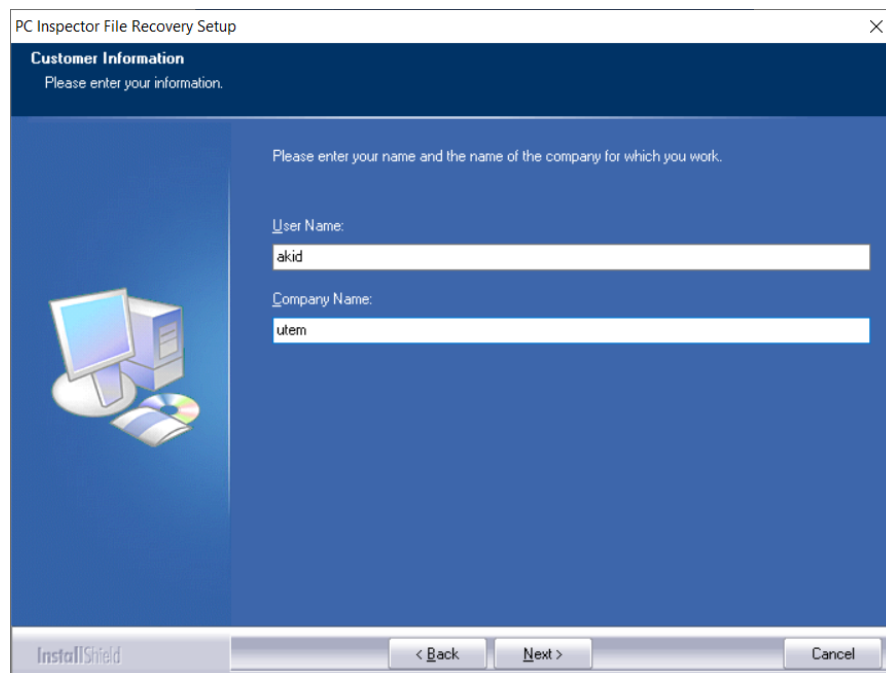
- Open the pci_filerecovery.exe to begin the installation process.
- A window will pop-up. Choose English as the setup language and click *OK*. The setup window will appear.
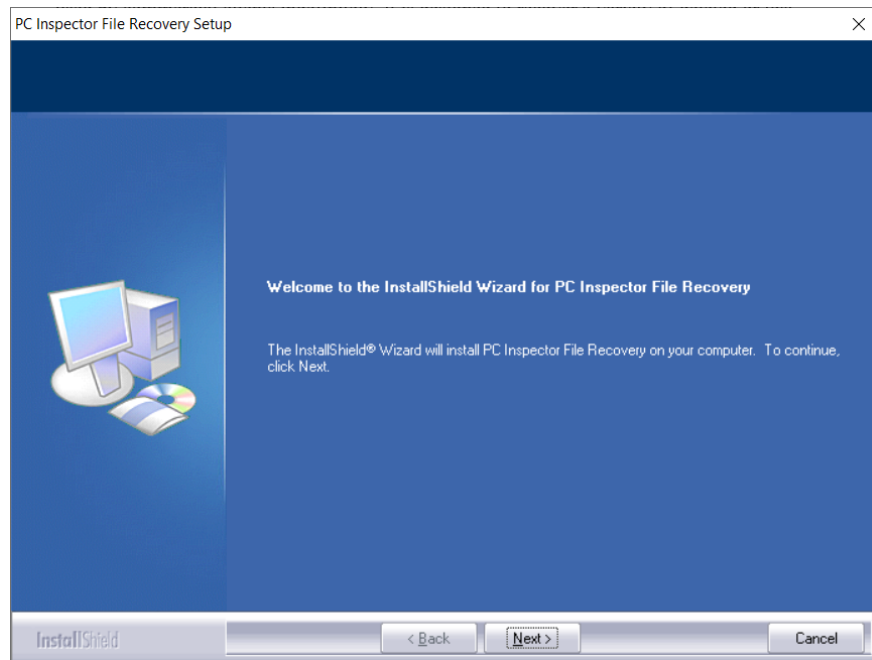
- Click *Next*. Read the license agreement and click *Yes* to accept it.
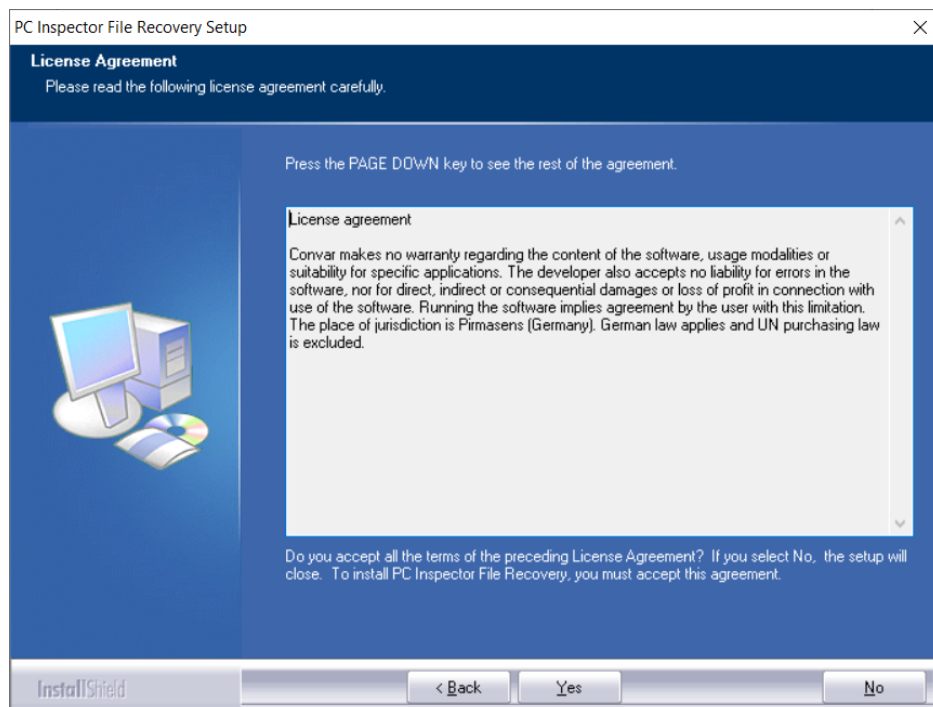
- Enter the user's name and company name. Click *Next*.

- Click *Browse* to change the directory files. If not, just click *Next*.

- Review the setting to make sure everything is correct. Click *Back* to make change in the setting. If the setting is correct, click *Next*.
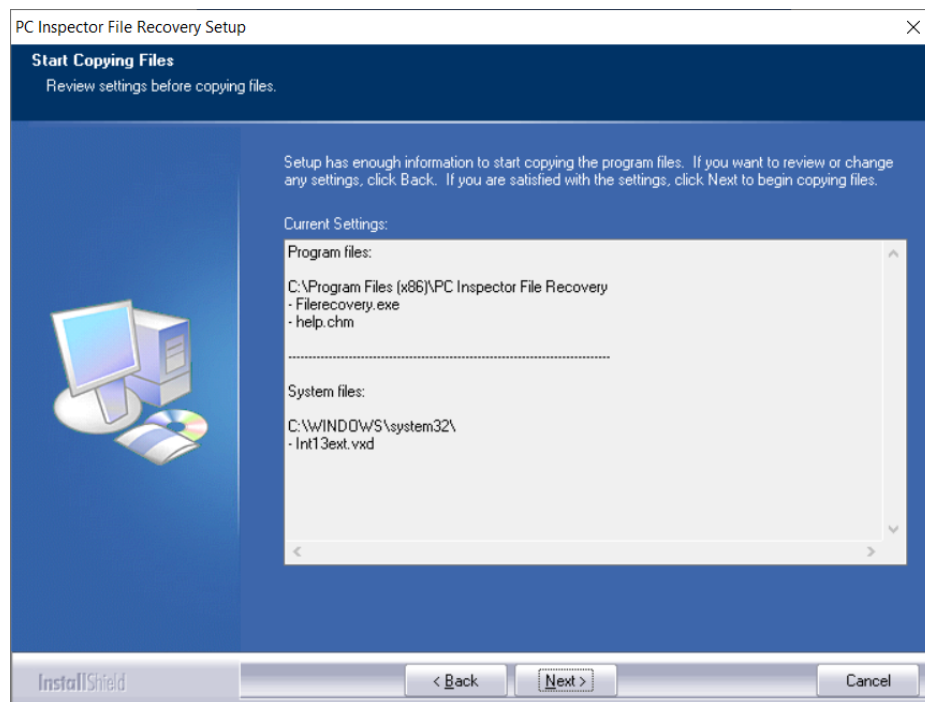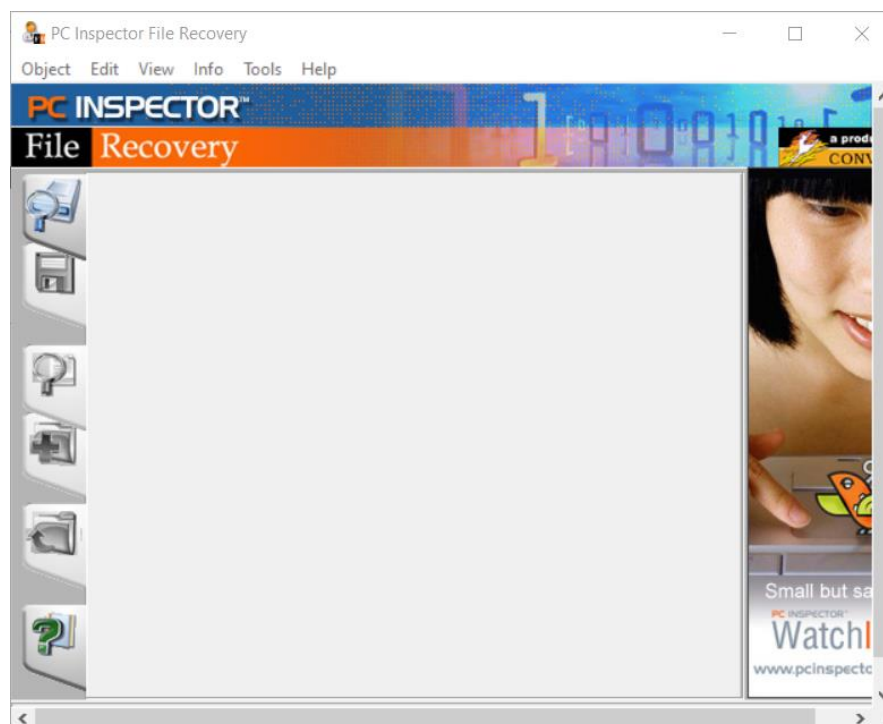

- The process will be initiated for about 1 minute or less. Then click *Finish* to complete the installation process.
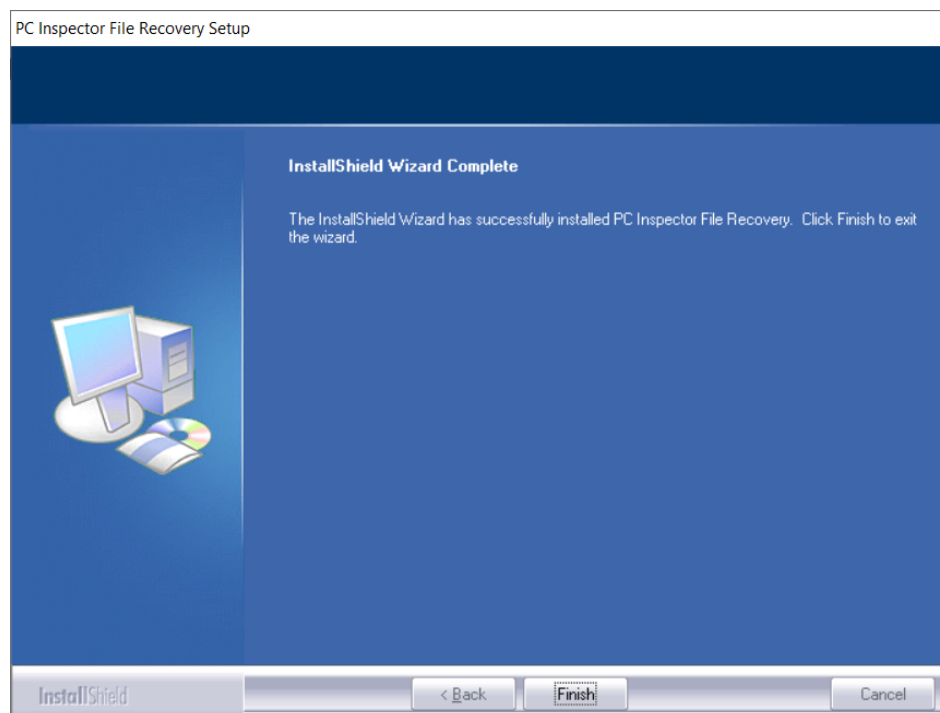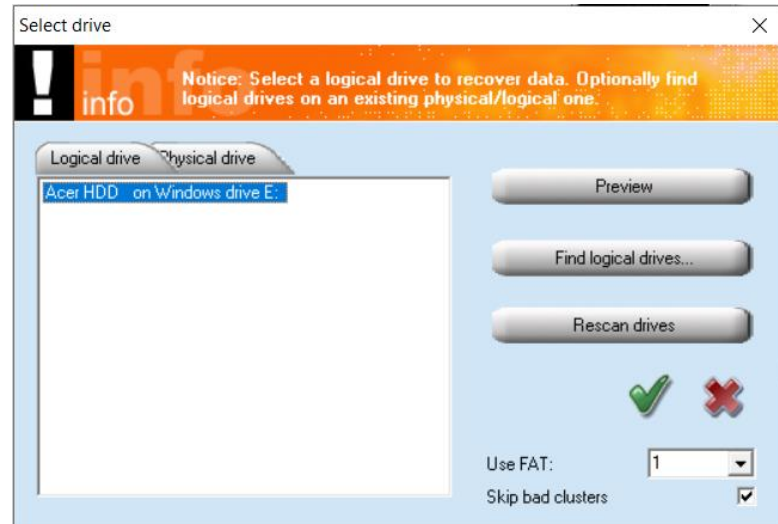
- Open PC Inspector File Recovery application in the desktop.

- Choose English as the language. Click the tick button to confirm.
- A welcome message will appear. Click cross button to close it.

- Click the first icon at the left side of the application for data recovery services.

- Select the Logical drive tab.

- Use the default setting and click the tick button.

- The list of files and folder will be shown as below. In green folder icon is the files or folders that has been deleted and no longer exist in the device while yellow is for the existing files and folders.
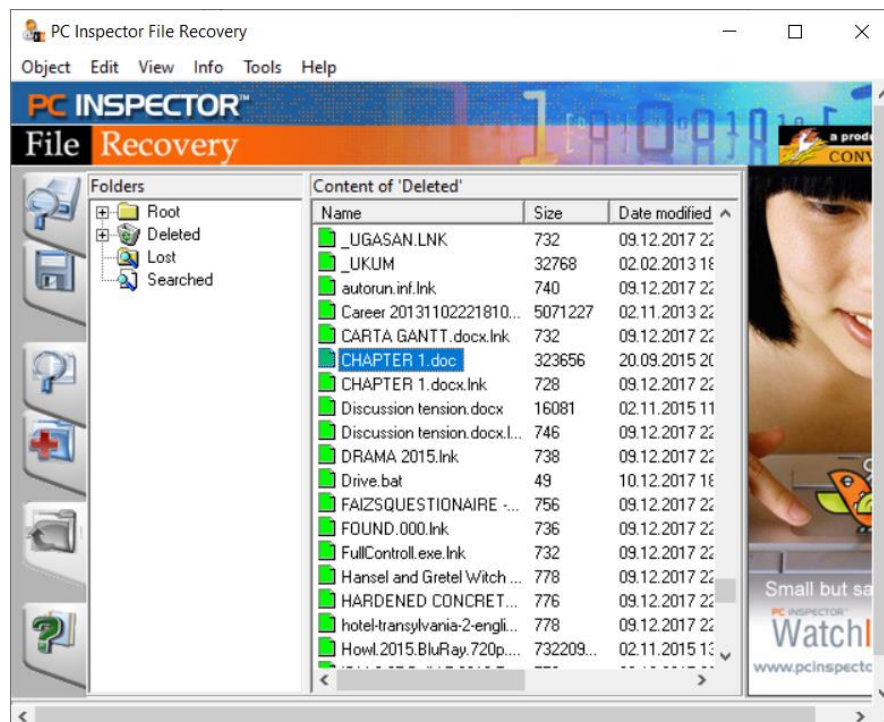
- Choose and click one of the that needs to be recovered (CHAPTER 1.DOC), then click the save icon. Select the directory of where to save the recovered files and click the tick button.
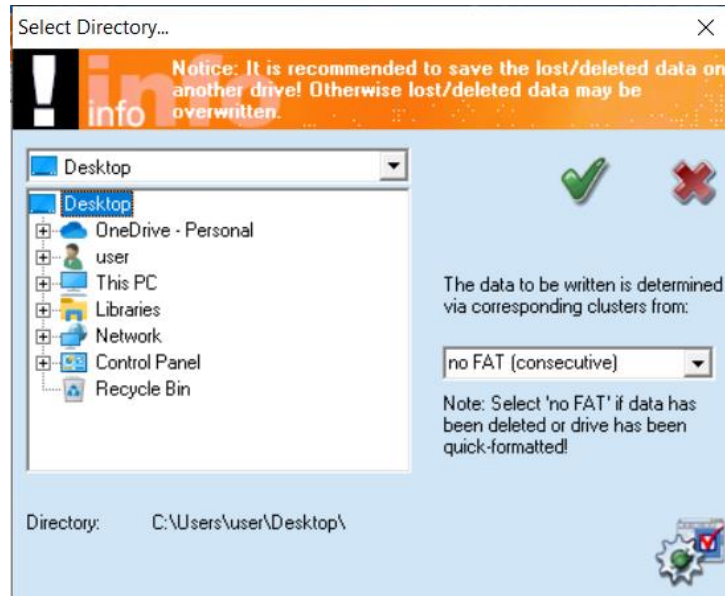
- Now the files have been recovered successfully and save at desktop.
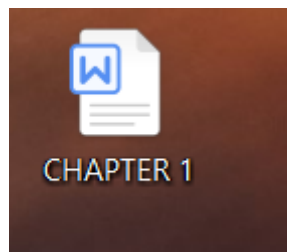
DISK DRILL

INTRODUCTION

Disk Drill is a powerful tool for scanning, recovering, and protecting data on almost any storage device, including internal and external hard drives, cameras, iPods, USB flash drives, Kindles, and memory cards. Disk Drill can recover all file systems (HFS and HFS+, FAT/FAT32/exFAT, NTFS, EXT3/EXT4) and file types (including volumes with missing or corrupted file systems).

Furthermore, Disk Drill not only recovers your files but also protects them from damage by utilising three distinct features. The Recovery Vault feature remembers the location and filename of every file removed from your Mac. Guaranteed Recovery copies every file deleted from the Trash, giving you the option to "Undelete" even after you empty the trash bin. And S.M.A.R.T. Monitoring keeps an eye on your hard drive and alerts you if it shows any signs of failure. It's also loaded with free disc tools for both professionals and home users, so you don't have to buy extra software to clean up your hard drive, create DMG backups, or monitor the health of your disc.

INSTALLATION AND DEMO MANUAL

- Go to https://www.cleverfiles.com/data-recovery-software.html and click Free Download to download the software.


Disk Drill Data Recovery Software

Recover any type of deleted files in Windows including Office documents, messages, and media files quickly and easily. Disk Drill for Windows is free data recovery software that restores deleted files from an HDD, USB drive or any kind of disk-based storage media with just a few clicks.
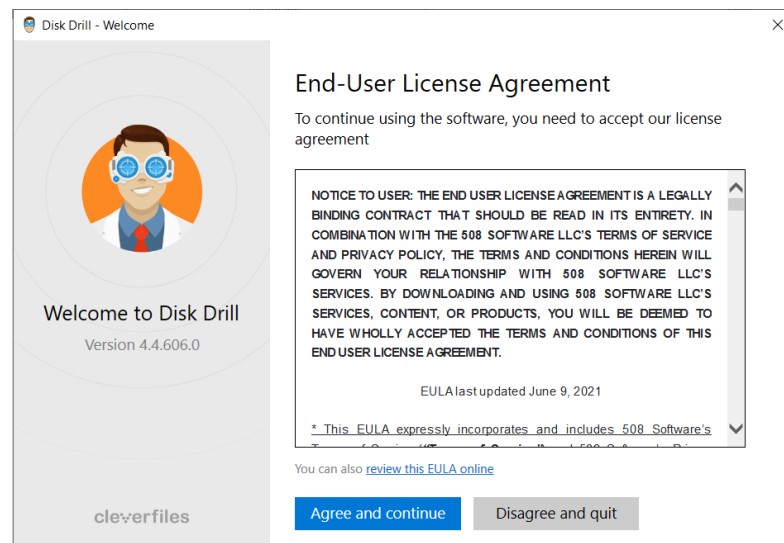
Free Download   **Upgrade to PRO**

- Open disk-drill-win.exe and click *Install* to begin the installation process. Make sure to click yes for administrator control.
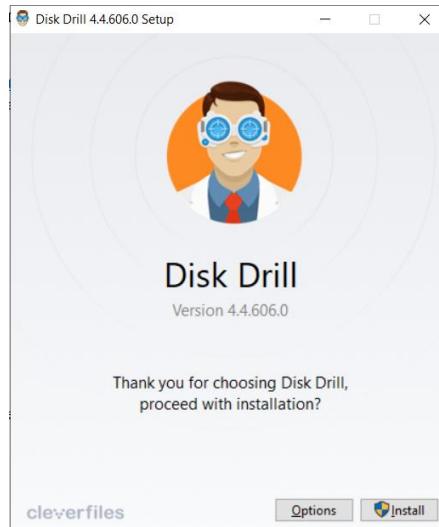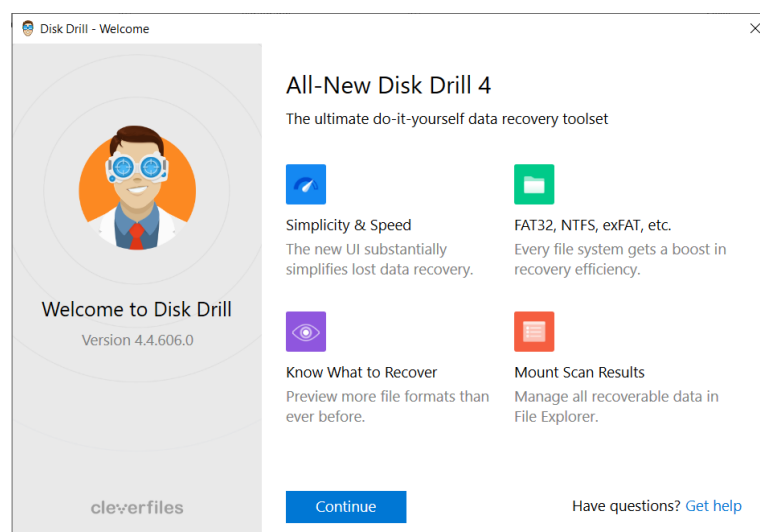

- The installation will take about 1-2 minutes to complete. Click *Launch* to open it immediately.
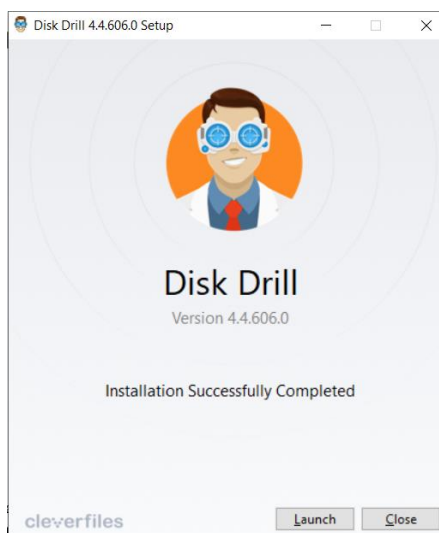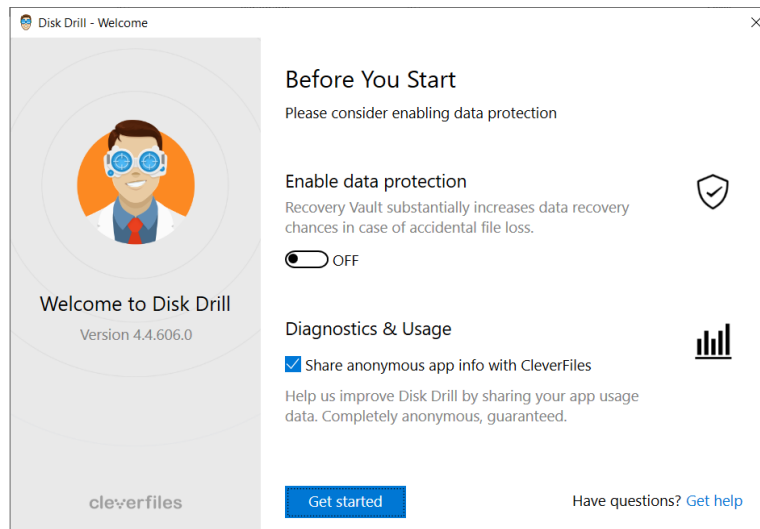
- A welcome window will appear. Read the end-user license agreement and after finishing it click *Agree and continue*.
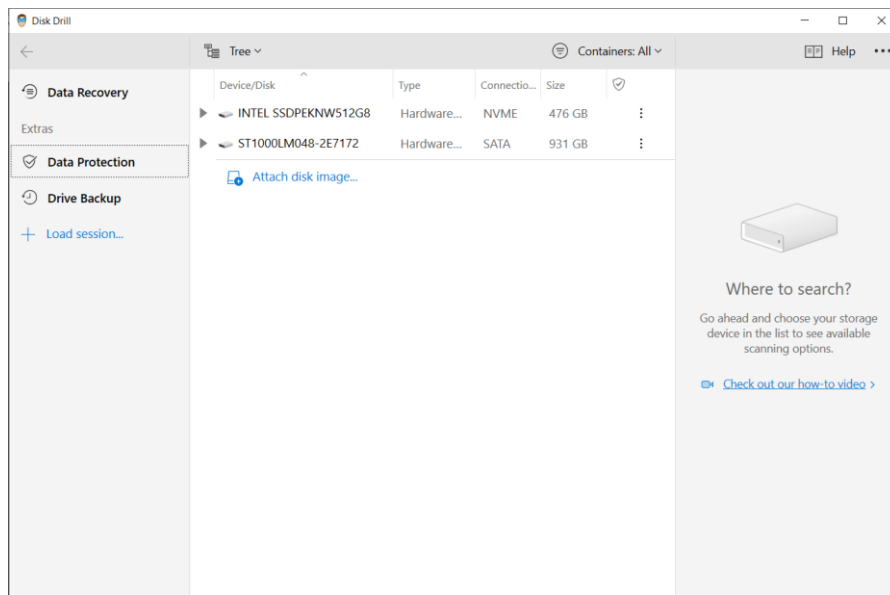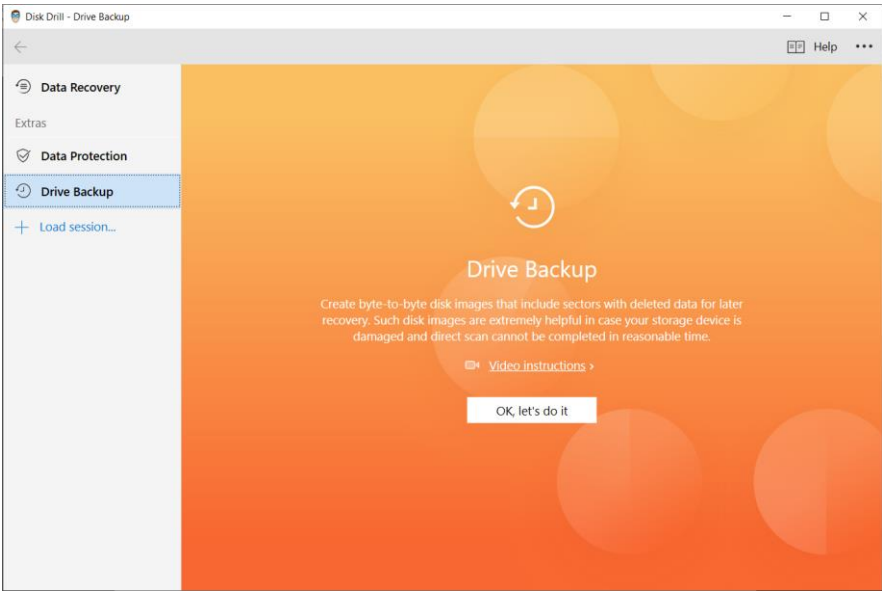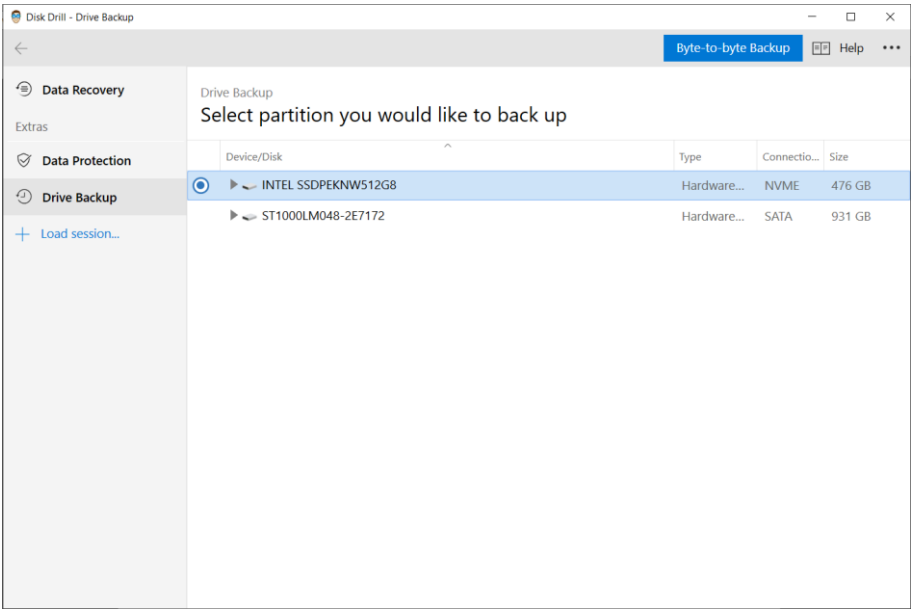

- Click *Continue* and then *Get Started*.

- The disk drill application will appear.

- Click *Drive Backup* and then *OK*, let's do it.

- Choose the partition that needs to do backup. Click *Byte-to-byte Backup*.

- Choose ISO image type file and the directory where the file will be saved. Click *OK*.
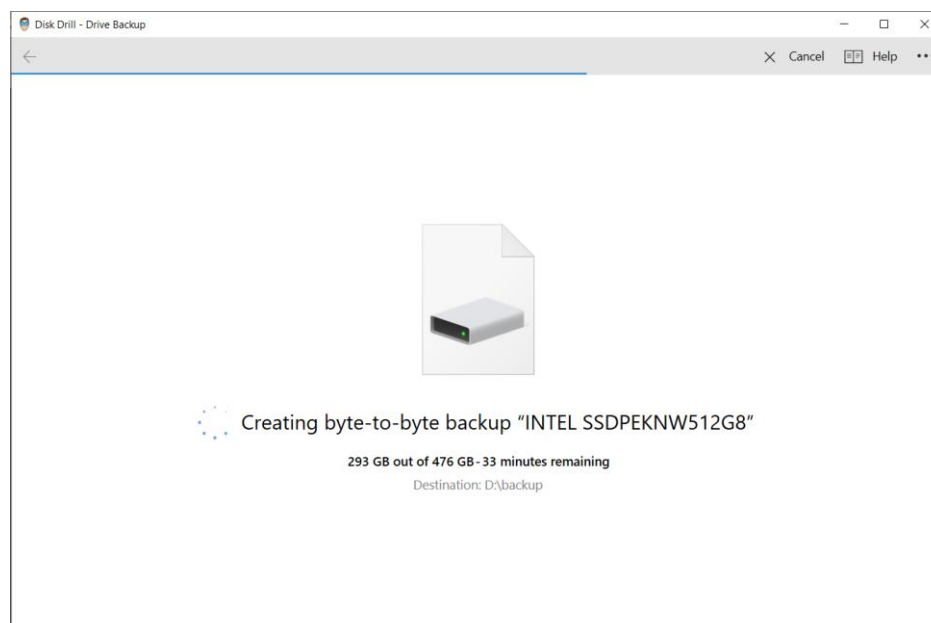
- The backup process will begin. Wait for it to finish. The backup time will vary respectively to the size of the drive.
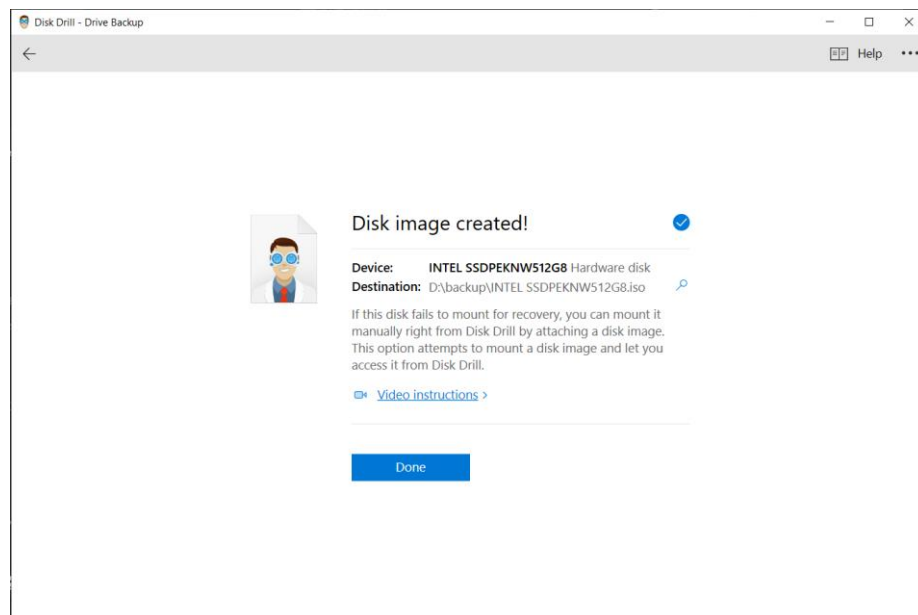
- The backup is completed and click *Done* to finish.

TestDisk

INTRODUCTION

TestDisk is a free data recovery tool that only applicable for partition recovery. It is a command-line tool that supports many operating system and filesystems. The application's main purpose is to recover lost disk partitions and fix bootable disks that are no longer booting correctly. One of the strengths of TestDisk is the wide range of filesystems that are recognized by the tool. It can recover lost partitions that employ these diverse filesystems on the Windows, Mac, Unix, and Linux platforms. The app is still supported by its developer and is available in bootable version.

Partition table recovery using TestDisk is easy. TestDisk can fix partition table, recover deleted partition, recover FAT32 boot sector from its backup, rebuild FAT12/FAT16/FAT32 boot sector, locate ext2/ext3/ext4 Backup SuperBlock, copy files from deleted FAT, exFAT, NTFS and ext2/ext3/ext4 partitions and many more. TestDisk has features for both novices and experts. For those who know little or nothing about data recovery techniques, TestDisk can be used to collect detailed information about a non-booting drive which can then be sent to a tech for further analysis. Those more familiar with such procedures should find TestDisk a handy tool in performing onsite recovery.

INSTALLATION AND DEMO MANUAL

- TestDisk can be downloaded from: https://www.cgsecurity.org/wiki/TestDisk_Download

TestDisk & PhotoRec 7.1 (July 7, 2019), Data Recovery
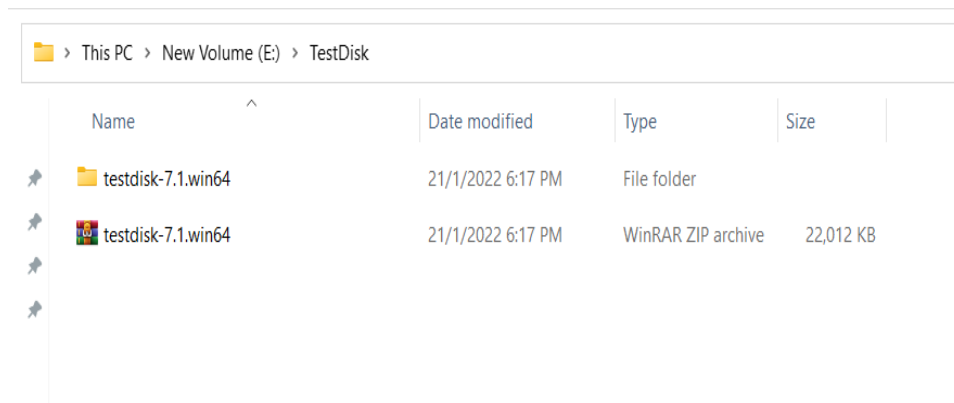
For more information, read the 7.1 release notes and git history.
Select your operating system to download the latest version of TestDisk & PhotoRec data recovery tools.

- Dos/Win9x
- Windows, minimum requirement: Windows Vista, Windows Server 2008 and above.
- Windows 64-bit
- Linux, kernel 2.6.18 or later i386
- Linux, kernel 2.6.18 or later x86_64
- Mac OS X Intel / OS X / macOS
- macOS 64 bits: `brew install testdisk` (see https://docs.brew.sh/Installation)
- Mac OS X PowerPC
- Marvell 88F628x Linux 2.6.32 Synology DS111, DS211, DS212+ NAS, Seagate BlackArmor NAS 220, QNAP ARM based including TS-410
- TestDisk & PhotoRec Source code

Do you **need a graphical user-interface** to recover your lost files on Mac or Windows ? Try our partner Disk Drill here.

TestDisk 7.1
Free download
Windows

- Extract the zip file

> This PC > New Volume (E:) > TestDisk

	Name ^	Date modified	Type	Size
	testdisk-7.1.win64	21/1/2022 6:17 PM	File folder	
	testdisk-7.1.win64	21/1/2022 6:17 PM	WinRAR ZIP archive	22,012 KB

- Run the "photorec_win" file

This PC > New Volume (E:) > TestDisk > testdisk-7.1.win64 > testdisk-7.1

Name	Date modified	Type	Size
libjpeg-62.dll	21/1/2022 6:17 PM	Application extens...	642 KB
libpcre-1.dll	21/1/2022 6:17 PM	Application extens...	285 KB
libpcre2-16-0.dll	21/1/2022 6:17 PM	Application extens...	529 KB
libpng16-16.dll	21/1/2022 6:17 PM	Application extens...	240 KB
libssp-0.dll	21/1/2022 6:17 PM	Application extens...	138 KB
libstdc++-6.dll	21/1/2022 6:17 PM	Application extens...	18,295 KB
libwinpthread-1.dll	21/1/2022 6:17 PM	Application extens...	67 KB
NEWS	21/1/2022 6:17 PM	Text Document	20 KB
photorec.se2	21/1/2022 6:22 PM	SE2 File	40 KB
photorec_win	21/1/2022 6:17 PM	Application	851 KB
qphotorec_win	21/1/2022 6:17 PM	Application	791 KB
Qt5Core.dll	21/1/2022 6:17 PM	Application extens...	5,602 KB
Qt5Gui.dll	21/1/2022 6:17 PM	Application extens...	5,542 KB
Qt5Widgets.dll	21/1/2022 6:17 PM	Application extens...	6,720 KB
readme	21/1/2022 6:17 PM	Text Document	1 KB
testdisk	21/1/2022 6:17 PM	Microsoft Edge PD...	240 KB
testdisk_win	21/1/2022 6:17 PM	Application	665 KB
THANKS	21/1/2022 6:17 PM	Text Document	1 KB
VERSION	21/1/2022 6:17 PM	Text Document	1 KB
zlib1.dll	21/1/2022 6:17 PM	Application extens...	94 KB

ected 850 KB

- Choose which partition you want to recover (in this case we choose the first one)

- Press Enter to proceed

- Choose "ext2/ext3"

- Choose "Free" because we just want to test it first, if we choose whole it will takes much longer time
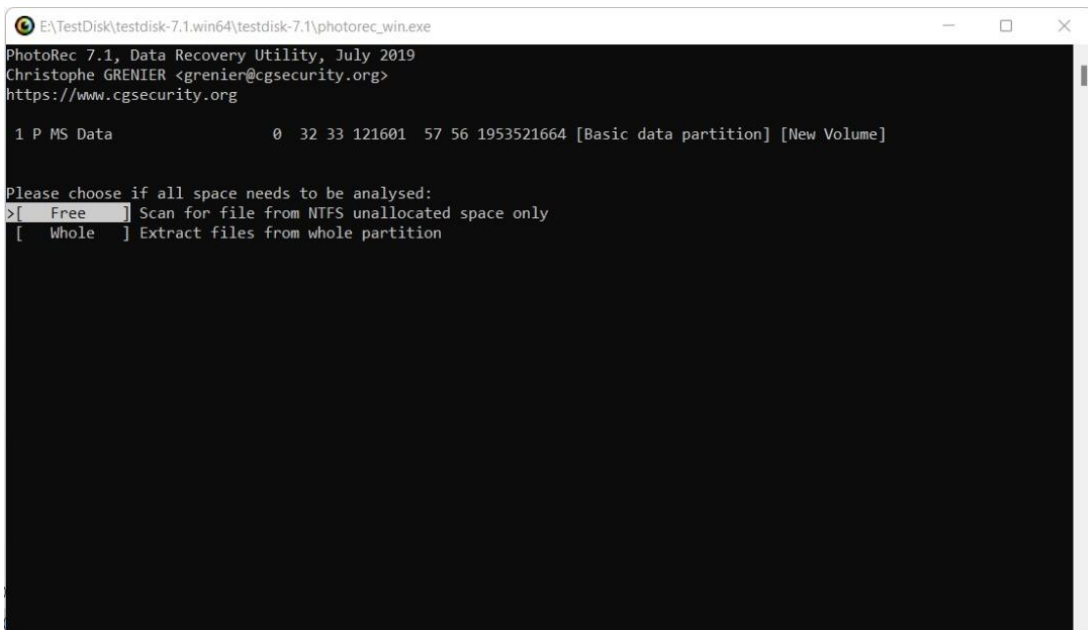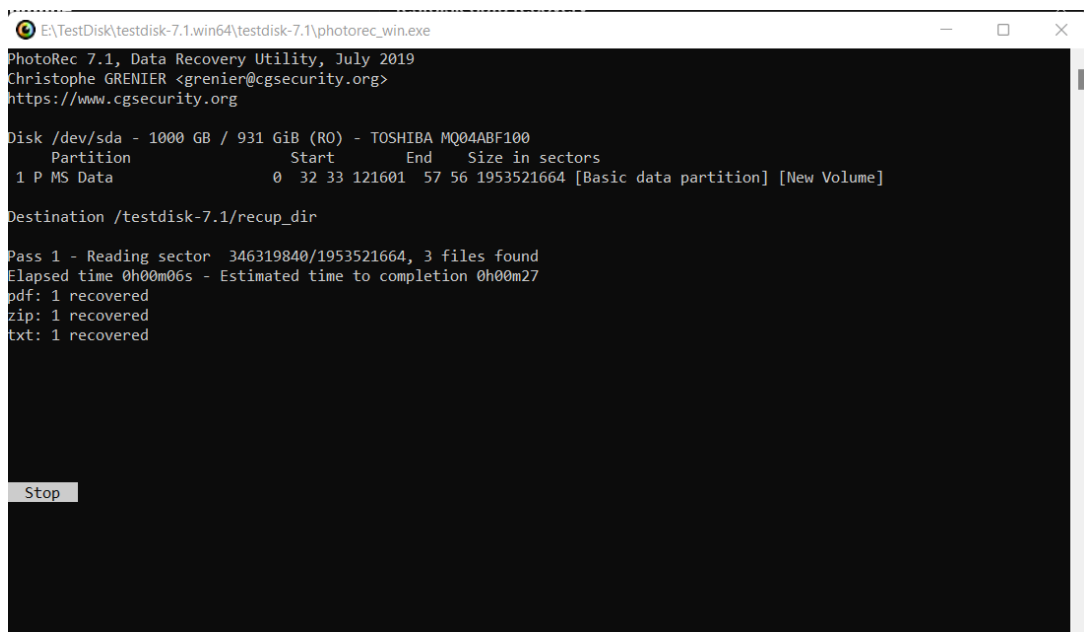
- Choose the file that you want to recover (in this case we choose the latest one), press "C"

- The recovered file is saved to the following directory

- Check the recovered file

CIA ANALYSIS

	PC Inspector File	Disk Drill	TestDisk
Confidentiality	Have to grant full access of drives data only on the drives where the data is lost.	Have full access in order to scan every bit of the data in the drives.	Have full access to scan the whole partition.
Integrity	Some deleted files may not able to be recovered.	There probability of changes in data is being made is quite high.	Many different filesystem and partition are recoverable
Availability	All data fully accessible.	Some of the data cannot be accessed.	All data fully accessible.