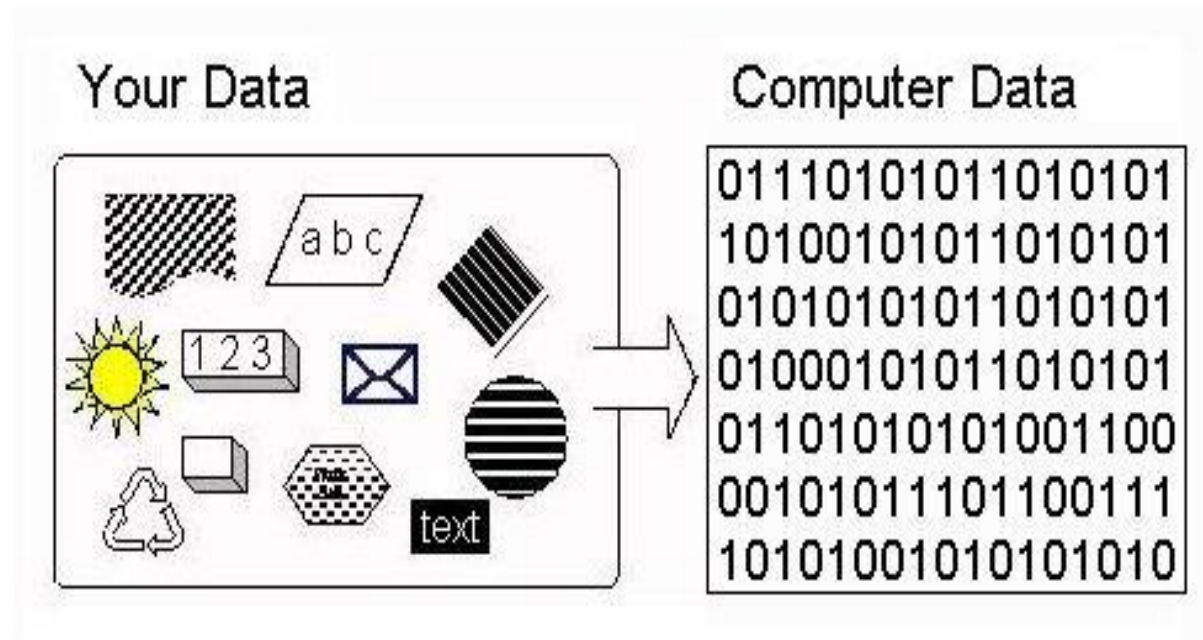# Backup Your Data

2025 Edition
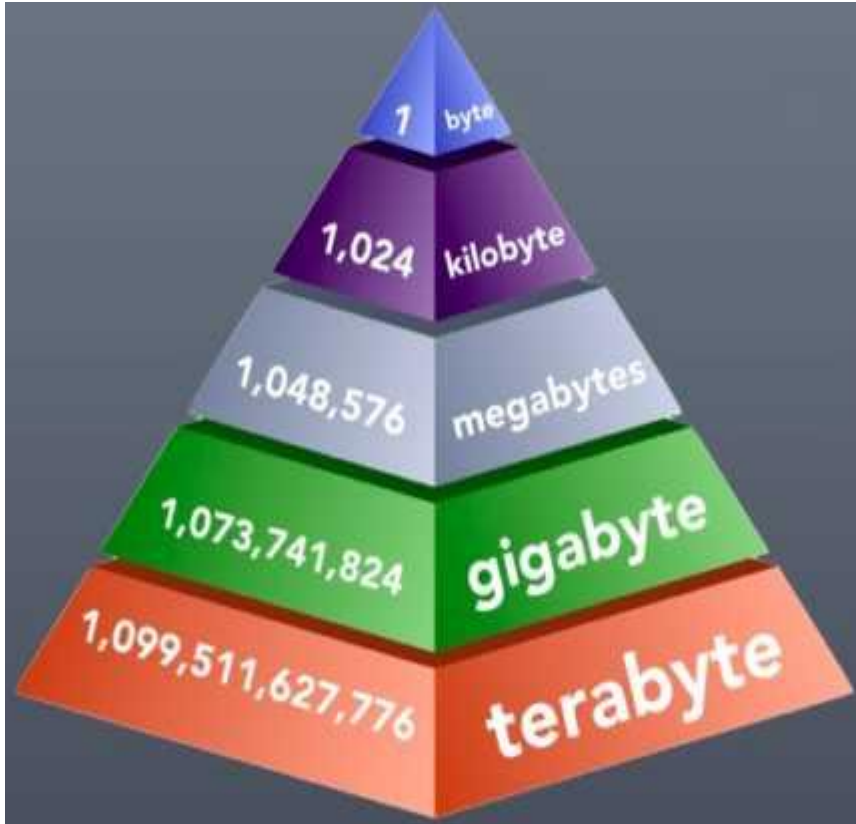
All data on a computer is a bunch of 1s & 0s.

Each independent 0 or 1 is called a bit.

A combination of eight 0s & 1s is called a byte.

Your Data

Computer Data

0111010101011010101
1010010101101010101
0101010101011010101
0100010101101010101
0110101010101001100
0010101110110011011
1010100101010101010

Understanding Bytes

Data conversion

There are conversion calculators to help.

A bit is numerical 0 or 1

8 bits = 1 byte
1024 bytes is 1 KB

Kilobyte   KB
Megabyte   MB
Gigabyte   GB
Terabyte   TB

Capital case " B " for Bytes

Lower case " b " for bite

SanDisk 4TB Extreme PRO Portable SSD - Up to 2000MB/s - USB-C, USB 3.2 Gen 2x2, IP65 Water and Dust Resistance, Updated Firmware - External Solid State Drive - SDSSDE81-4T00-G25

4.4 ★★★★☆ (15.7K)

3K+ bought in past month

$314.99

FREE delivery **Sat, Nov 8**
Or fastest delivery **Tomorrow, Nov**

Add to cart

More Buying Choices
$282.83 (34+ used & new offers)

HIGH cost
per gigabyte

Con: Data Leaking

Best for active use programs and files.

WD 2TB Elements Portable External Hard Drive for Windows, USB 3.2 Gen 1/USB 3.0 for PC & Mac, Plug and Play Ready - WDBU6Y0020BBK-WESN

4.6 ★★★★☆ (332.2K)

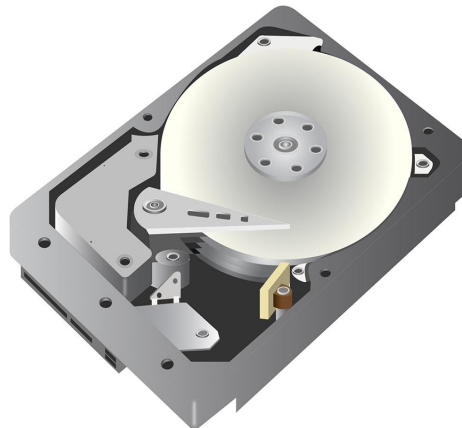7K+ bought in past month

$69.99 List: $79.99

FREE delivery **Sat, Nov 8**
Or fastest delivery **Tomorrow, Nov 4**

Add to cart

More Buying Choices
$60.68 (21+ used & new offers)

LOWER cost
per gigabyte

Best for mass storage.
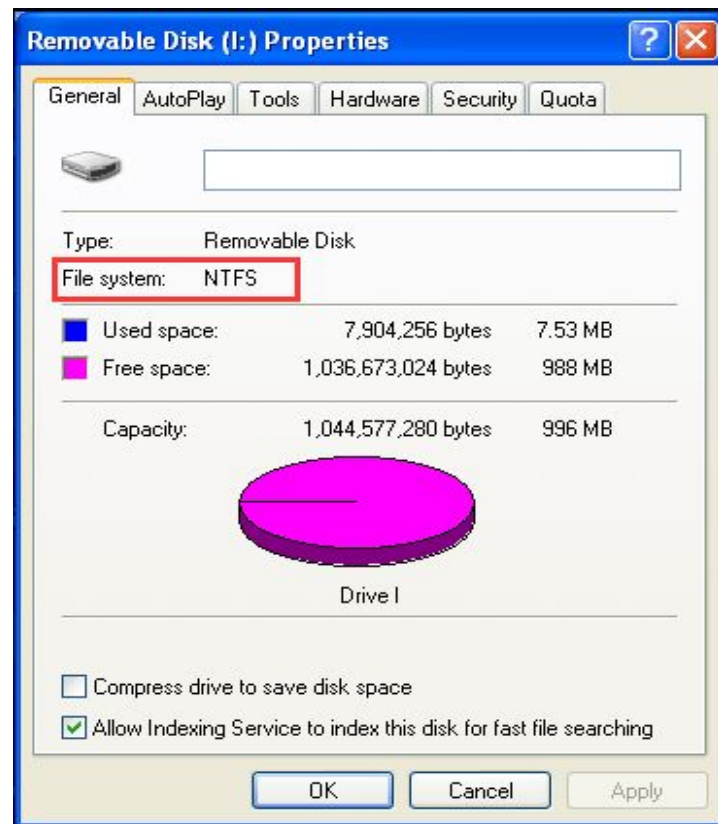
BUYING A NEW STORAGE DRIVE

Universal compatibility with PCs and Mac computers.

NTFS - New Technology File System

Apple File System = AFS
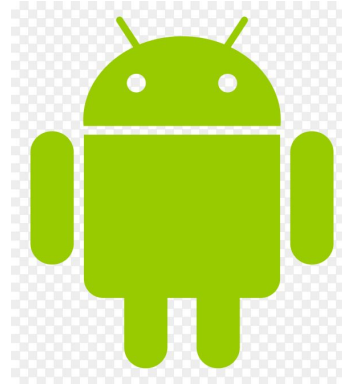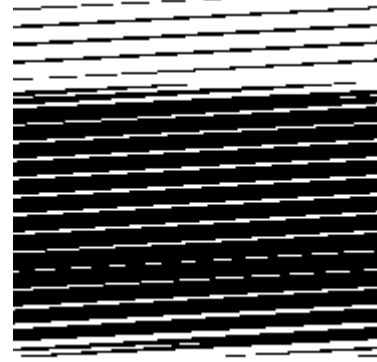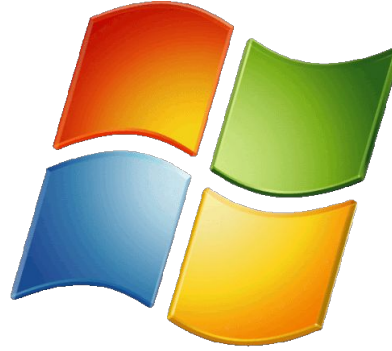
File Allocation Table (FAT)

FAT32

MAX file size of 4GB

Max partition size of 8TB

exFAT (Extended File Allocation Table)

exFAT limit of 128 petabytes

MAX partition size of 128 PB

MAC
Use AFS or exFAT

Windows
Use NTFS or exFAT

Flash Drives / Thumb Drives / USBs

DO NOT USE A USB DRIVE FOR YOUR MAIN BACKUP

- Prone to failure
  - USB drives are flash memory and have a shorter lifespan.
- Easy to lose
- Corruption: Data can be corrupted if the drive is removed without being properly ejected from a computer.
- Limited write cycles: Has a finite number of write/erase cycles meaning the drive will eventually wear out after extensive use.
- Vulnerability: Susceptible to physical damage more easily.

Two Types of DATA Backups

1. **Your Files**
   - Unique to your computer.
   - Hard to access with no operating system

2. **The Operating System**
   - Used to access your files.

Different Types of Backups

Full Backup - aka System Image
A **complete copy** of all selected data.

Takes longest to create, requires the most storage space.

Incremental Backup -
Copies only the data that has **changed since** the **last backup**.

Differential Backup
Copies **all** data that has changed since the last **full backup**.

https://www.nakivo.com/blog/backup-types-explained/

Backup Windows

Windows File History

Ask Leo!

https://www.youtube.com/watch?v=DpEHO9he-Rw

ZacsTech

https://www.youtube.com/watch?v=oUDw5m3QpZY
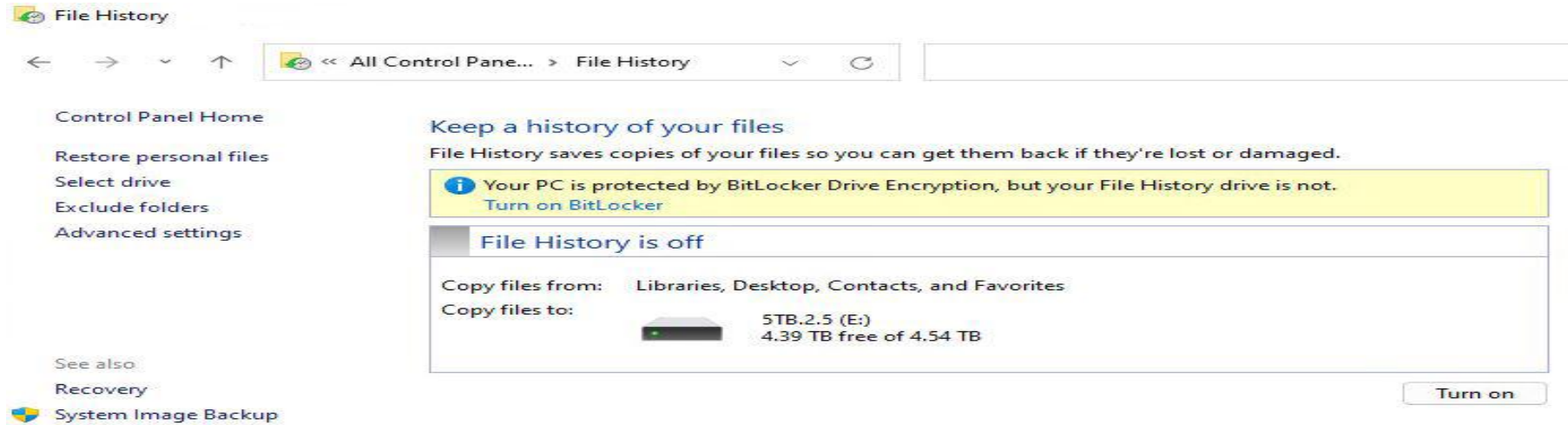
Creating a Windows Recovery Image

1. Go to Start > Settings > Update & Security > Backup.

2. Click on "Go to Backup and Restore (Windows 7)".

3. Click "Create a system image" on the left-hand side.

4. Choose a location to save your backup, such as an external hard drive or a network location.

5. Select the drives you want to include in the backup. By default, Windows includes the drives required to run Windows.

https://www.youtube.com/watch?v=M_yFnJ8PmKA&t=6s

Best match

Create a recovery drive
Control panel   ⟵

Search the web

🔎 create a reco - See web results   >

🔎 create a recovery drive   >

🔎 create a recovery drive windows 10   >

🔎 create a recovery usb port   >

🔎 create a recovery usb   >

🔎 create a recovery drive on usb   >
windows 10

🔎 create a recoo   >

🔎 create a recovery disk 10   >

Create a recovery drive
Control panel

🗗 Open

🔎 create a recovery drive

Windows Recovery Environment

is a toolset included with Windows that helps troubleshoot and fix computer problems when the system won't start normally. It provides access to tools like [Automatic](#) [Repair](#), [System Restore](#), and [Push-button reset](#) to help you repair your PC or restore it to a previous state.

Advanced options

Start-up Repair
Fix problems that keep Windows from loading

Start-up Settings
Change Windows' start-up behaviour

Command Prompt
Use the Command Prompt for advanced troubleshooting

Uninstall Updates
Remove recently installed quality or feature updates from Windows

System Restore
Use a restore point recorded on your PC to restore Windows
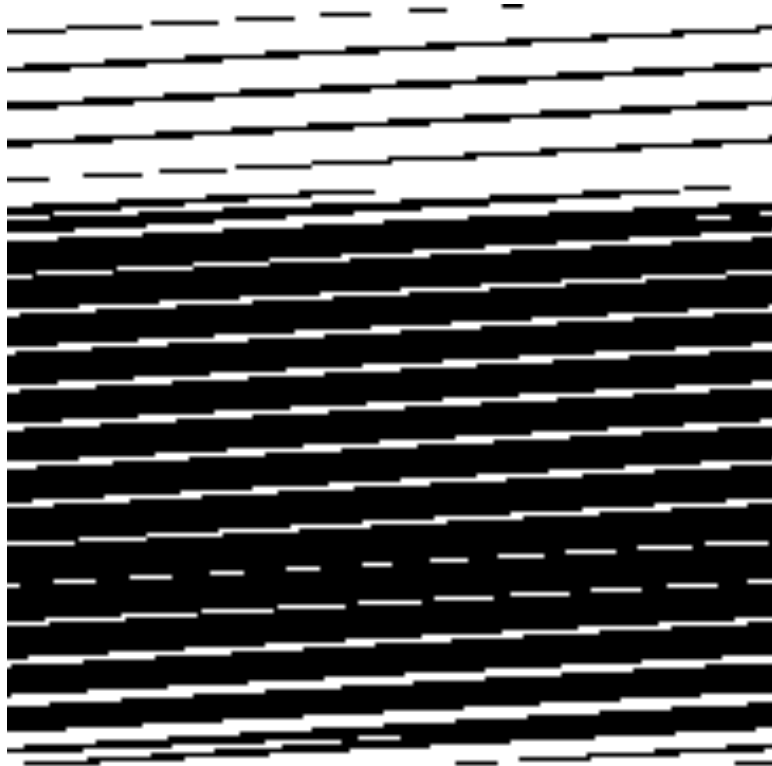
System Image Recovery
Recover Windows using a specific system image file

Access Windows Recovery Environment (WinRE)
If Windows is broken.

Using a bootable USB drive

- Connect the Windows recovery or installation media (USB drive) to your computer.

- Turn on your computer and repeatedly press the key to access the boot menu, which is often F12 but can vary (check your manufacturer's documentation, or try F2, F10, or Esc).

- From the boot menu, select your USB drive and press Enter.

- Once the recovery media loads, select Troubleshoot to access the recovery options.

How to backup mac OS

https://www.youtube.com/watch?v=A74Q5_YHvHU
https://support.apple.com/guide/mac-help/view-and
-restore-past-versions-of-documents-mh40710/mac

Backup Mac

How to use macOS Recovery

- Start your Mac: Turn on your Mac and immediately press and hold the correct key combination. You can find the specific combination for your Mac model by going to Apple menu > About This Mac to check if it has Apple silicon (a chip) or an Intel processor.
- **Access macOS Recovery:**
  - On Apple silicon: Press and hold the power button until you see the startup options, then click Options and Continue.
  - On Intel-based Macs: Press and hold Command-R immediately after turning on your Mac until you see the Apple logo or a spinning globe.

MAC OS

RECOVERY

Restore from Time Machine

Reinstall macOS
- Reinstalls the previous OS on top of the old OS.

Disk Utility
- Repair or erase a disk using the Disk Utility tool.

Restore from Time Machine
If you have backup of your system that you want to restore.

Reinstall macOS Sequoia
Install a new copy of macOS Sequoia onto your Mac.

Safari
Browse Apple Support to get help with your Mac.

Disk Utility
Repair or erase a disk using Disk Utility.

Continue

" **the Cloud, "** is really about using someone else's computers to handle your data or provide services for you.
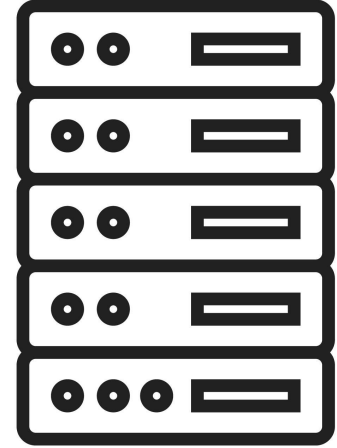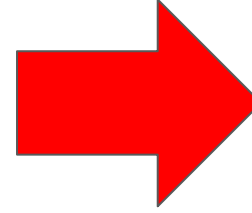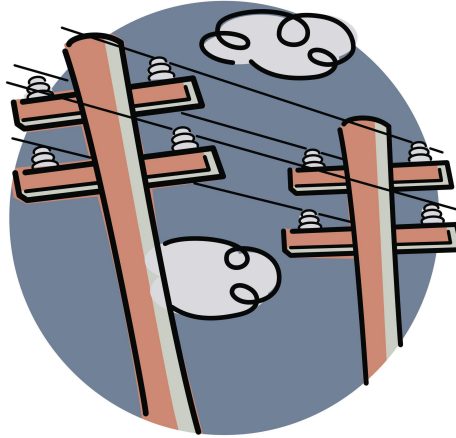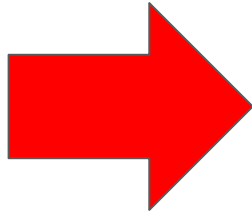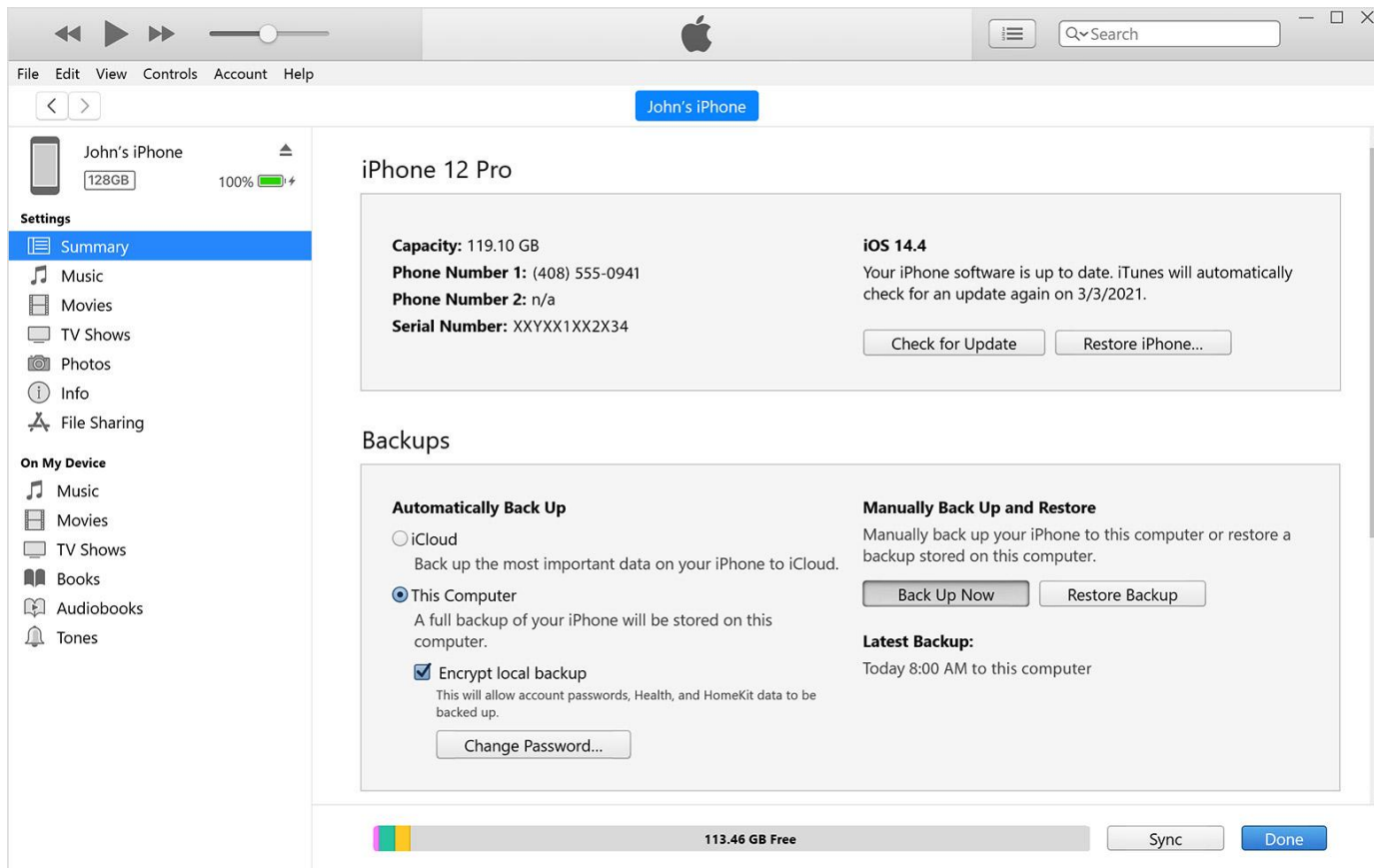
All cloud services will require a login and password to gain access

iPhone & iPad

iPhone   **iPhone Plus**   **iPhone Pro**   **iPhone Pro Max**

iTunes for Windows Desktop / macOS Desktop

https://support.apple.com/en-us/108366
– icloud backup

https://www.pcmag.com/how-to/how-to-make-sure-icloud-is-backing-up-syncing-your-data

- How to sync your data

Offers a full image backup to the cloud.

Includes the benefit of automatically share files between multiple Apple devices.

Files App

To manage files on an iPhone, use the Files app to browse, organize, and manipulate files across different locations like iCloud Drive and "On My iPhone".
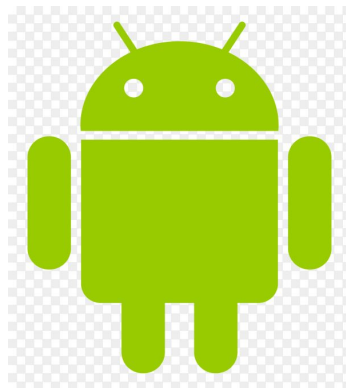
You can organize files by creating folders, moving or copying them, renaming them, and compressing them into ZIP archives.

Flash Drive to iPhone

https://www.youtube.com/watch?v=C-pOPt_DvbI

Android Backup

Back up your device

Choose data to back up in case your device is lost, stolen, or damaged. Your backup uses your Google Account storage. How your data is protected

Photos & videos
Automatically back up to Google Photos so you can view, share, and search ☑

Other device data
Contacts, call history, device settings, apps & app data, SMS & MMS messages, and SIMs ☑

Cancel   Confirm

Backup status

Photos & videos
Backup is on ✓

Other device data
Backup is on ✓

Manage backup

← **Backup**

Account storage

13 GB of 2.0 TB (1%) used

Manage storage

Backup by Google One
Pixel 6a · No data backed up ⬤

Back up now

Your device backs up automatically over Wi-Fi after it's been idle and charging for 2 hours

Backup details

Apps
No data backed up

Photos & videos
Waiting to back up...

SMS & MMS messages
No data backed up

https://www.pcmag.com/how-to/how-to-back-up-restore-your-android-device

Transfer data using to USB Drive

https://www.youtube.com/watch?v=iiJbOn6Zgj4