File Share Options
High level overview

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- Seeker of wisdom and knowledge

Disclaimer

Not responsible for any damage done to you, your friends, your accounts, your pet goldfish, etc. All information is for educational or general knowledge purposes.
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If it's not legal then you should do it?

Issues

- With people moving from place to place and machine to machine (including: Phone, tablet, etc.), getting to your files or keeping them up to date across devices can be difficult.

- You also want to make sure the files are stored centrally and securely, keeping others from having access that do not need to have like, governments, Businesses or other people.

Some file share options covered.

- From company's: dropbox, google drive, Microsoft, spideroak, ftp/sftp

- Open source: spideroak, syncthing, NextClout, btsync, samba, sftp/ftp,

- Hardware: USB thumb drives, HDD

Some Issues

- Getting to the data from multiple machines and locations.

- Keeping the data secure in transport and being stored.

- Who owns the data on the servers, of the company goes belly-up can you get it?

- Do you really know what the company does?

Some Issues

- Ease of use on multiple devices, and the number of devices that can be used.

- Having a secure centrally located data, but being easy to replicate if needed to other machines.

- Source of truth (what data is the most current)
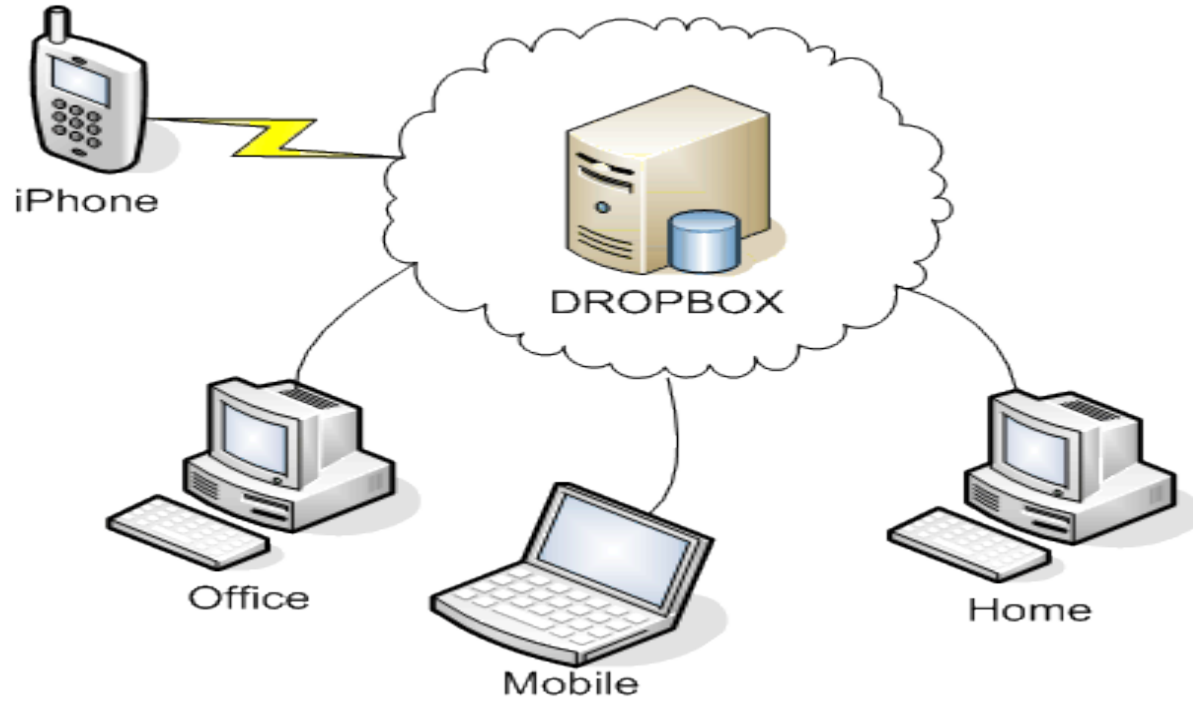
- Others?

The big players

Owned by big company

- Dropbox
- iCloud
- Google Drive
- Microsoft Drive
- Amazon Cloud Storage

DropBox

- Central location of file and folder location, from that location data is transferred to external devices.
- Upload of changes to central server are done in near real time.
- Speed up updates are done via upload of only changed blocks.

DropBox

DropBox

- SSL exchange synchronization to central server and between external clients.
- Limited encryption of files on the central server, files and folders are not encrypted in local clients. (dropbox has capability to decrypt data on central server if requested)

DropBox

- Pros: Easy to use, multi platforms (*Android, iOS, Linux, macOS, Microsoft Windows, Windows Phone*) , normally no need to open port in firewall. Been around from 2007, MIT students started it. Free tier available, paid version gives more features and storage.

DropBox

- Cons: Data not fully encrypted on central server (dropbox can decrypt if chose to). Not full end to end encryption SSL type only. Encryption keys accessible by employees.   Third party hack in 2012 and 2014 passwords and accounts compromised.

DropBox

- https://blog.wps.com/how-dropbox-works-and-why-you-should-use-it/
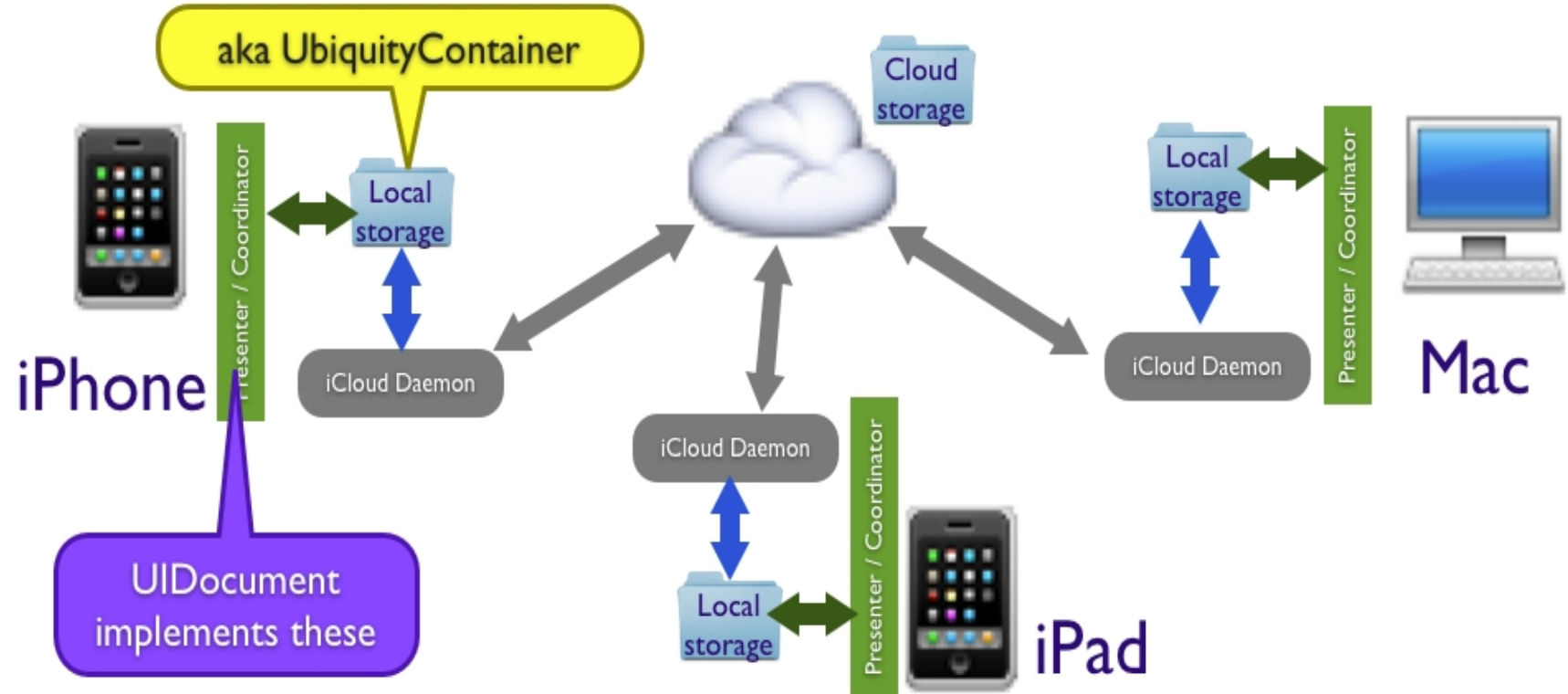
iCloud

iCloud

iCloud

- Apple cloud storage, SSL exchange between server and apple only clients, web based front in available.

Good evening, Juli.

Account Settings >

Mail

Contacts

Calendar

Photos

iCloud Drive

Notes

Reminders

Pages

Numbers

Keynote

Find Friends

Find iPhone

iCloud

- Pros: Apple only environment, 5 gig free, more as paid system. SSL type file exchange from client to Apple cloud server. Apple integrated to all apple products by default. More security minded then other public cloud storage services.

iCloud

- Cons: Apple holds encryption keys and able to decrypt as desired. No full end-to-end encryption between client and server. Apple only environment, closed source code. Multiple leaks published but little explanation of them. Data stored in multi-country's.

iCloud

- https://en.wikipedia.org/wiki/ICloud

- https://www.pocket-lint.com/apps/news/apple/131058-what-is-apple-icloud-drive-and-how-does-it-work

Google Storage Drive

Google Storage Drive

- Offered by Google, included is a google suite of products (mail, wp, storage). Created 2008, available to large number of OS platforms. Large number of servers in multi countries for use. Designed for "source of truth" issues.

Google Storage Drive

- Pros: Encrypted on cloud servers, end-to-end ssl file exchange. Most storage default then all other services. Two-step verification option with tokens or external systems.

Google Storage Drive

- Cons: Google keeps encryption keys and is able to decrypt as desired, ad based company. Near impossible to contact a human for issues. Known data breaches in past. Programmers like to modify but not define what changed, push out changes with little warning, kills products.

Microsoft Storage Drive

Microsoft Storage Drive

- Offered by Microsoft, included in its office 365 suite of products. Windows and Mac native, other operating systems via limited Web interface. SSL encrypt in transit, Personal Vault Option at extra price.
- What more needs to be said?

New ∨ | Upload ∨ | Move from | Rename

Sort ∨

OneDrive

Files

Recent

Photos

Shared

Recycle bin

Welcome to Personal Vault

Personal Vault is your place within OneDrive with an extra layer of security. Get started by moving your important files here.

Suggested files

See a list of files that we suggest you add to your Personal Vault for safe keeping.

View list

Move your files here

Quickly move files and folders into your Personal Vault with one click.

Move file

Scan your files here

Scan files directly to your Personal Vault with the OneDrive mobile app.

Download

Files > Personal Vault

Family Documents	Insurance	Taxes	Travel Documents	Property Docs	Kids Health Froms
Mar 16	Dec 20, 2018	May 7	Apr 21	Oct 3, 2018	May 2

590 MB used of 1 TB

Premium OneDrive

Microsoft Storage Drive

- Pros: 5 free storage tier and 1T storage with office 365 subscription. Web based access for all platforms, Windows and Mac app access. Office collaboration option. Personal Vault Security option. Web interface (limited functions on other OS system).

Microsoft Storage Drive

- Cons: Closed source, primary Windows and Mac OS unless limited use of web browser functionality. Encryption keys kept by Microsoft, SSL data exchange system. General usage of "Source-of-truth" data support. Data not under your control. Limited access to internal functions, (how it do what it do)

Microsoft Storage Drive

- https://www.microsoft.com/en-us/microsoft-365/ onedrive/online-cloud-storage

- https://en.wikipedia.org/wiki/Microsoft_OneDrive

You control

Data Held by you - opensource

- Syncthing

- NextCloud

- Magic Wormhole

- OnionShare

- USB / SSD drive

- SFTP/FTP

Syncthing

Syncthing

- Created 2013, Multiple OS, open-source file and folder exchange system, exchange between local and device over the internet. Local server user controlled hardware. TLS end to end encryption. File synchronization only, transport of data only. SHA256 hash of each block.

Q Search

Files ▼

eagle ▼

	Name ▲		Size	Modified
📁	documents		23 kB	a year ago
📁	music		3.6 MB	a year ago
📁	Notes		5 kB	4 months ago
📁	photos		7.5 MB	9 months ago
📁	syncthing		8 kB	**25 minutes ago**
📁	test		0 kB	3 months ago
📁	Videos		62.6 MB	a year ago
📁	at.bitfire.davdroid_40.apk	⤙ Shared	1.7 MB	a year ago
📄	New Document.odt		8 kB	a year ago
📕	ownCloudUserManual.pdf		1.8 MB	a year ago
	7 folders and 3 files		77.2 MB	

All files

★ Favorites

⤙ Shared with you

⤙ Shared with others

🔗 Shared by link

🗑 Deleted files

⚙ Settings

Syncthing

- Pros: User controlled hardware, TLS end to end encryption, Local server and internet access. Open-source community and code. Docker images for multiple OS's. Read only file and folder offers. UPnP port forward access. Small threat sacrifice (few access attacks). Simple transport layer, encrypted when device is off.

Syncthing

- Cons: Open-source community help, some fee based help access. Possible need to create a port hole in firewall. Long time (hours) building of large data file indexes on low powered hardware.

Syncthing

https://en.wikipedia.org/wiki/Syncthing

https://en.wikipedia.org/wiki/
Comparison_of_file_synchronization_software

https://www.gigenet.com/blog/how-to-set-up-a-complex-syncthing-network/

Magic Wormhole

Magic Wormhole

- Single file move from one machine to another, files only not folders. Encrypted the entire length using PAKE (Password Authenticated Key Exchange). Python based pip install. Use of string as code and connection system.

4. sender (bash)

```
% wormhole send digikey.pdf
Sending 287202602 byte file named 'digikey.pdf'
On the other computer, please run: wormhole receive
Wormhole code is  7-guitarist-revenge

Sending (<-127.0.0.1:53052)..
Progress: ######################## 100%    287MB
File sent.. waiting for confirmation
Confirmation received. Transfer complete.
%
```

5. receiver (bash)

```
% wormhole receive
                              7-guitarist-revenge
Receiving file (28720   2 bytes) into: digikey.pdf
ok? (y/n): y
Receiving (->tcp:127.0.0.1:53048)..
Progress: ######################## 100%    287MB
Received file written to digikey.pdf
%
```

Magic Wormhole

Pros: Open source python based, fully encrypted between exchanges, command line based, use of tor onion services.

Magic Wormhole

Cons: Use of Rendezvous Server, open source, command line only, python based.

Magic Wormhole

https://magic-wormhole.readthedocs.io/en/latest/

http://www.lothar.com/%7Ewarner/MagicWormhole-
PyCon2016.pdf

Onion Share

Onion Share

- Securely and anonymously share files of any size. A web server is started, making OnionShare accessible as a Tor Onion Service, potentially temporarily or in a stealthy manner, over the Internet.

- Open OnionShare, drag and drop files and folders into it, and click "Start Sharing". A secret .onion URL such as http://asxmi4q6i7pajg2b.onion/egg-cain will be presented for you to share.
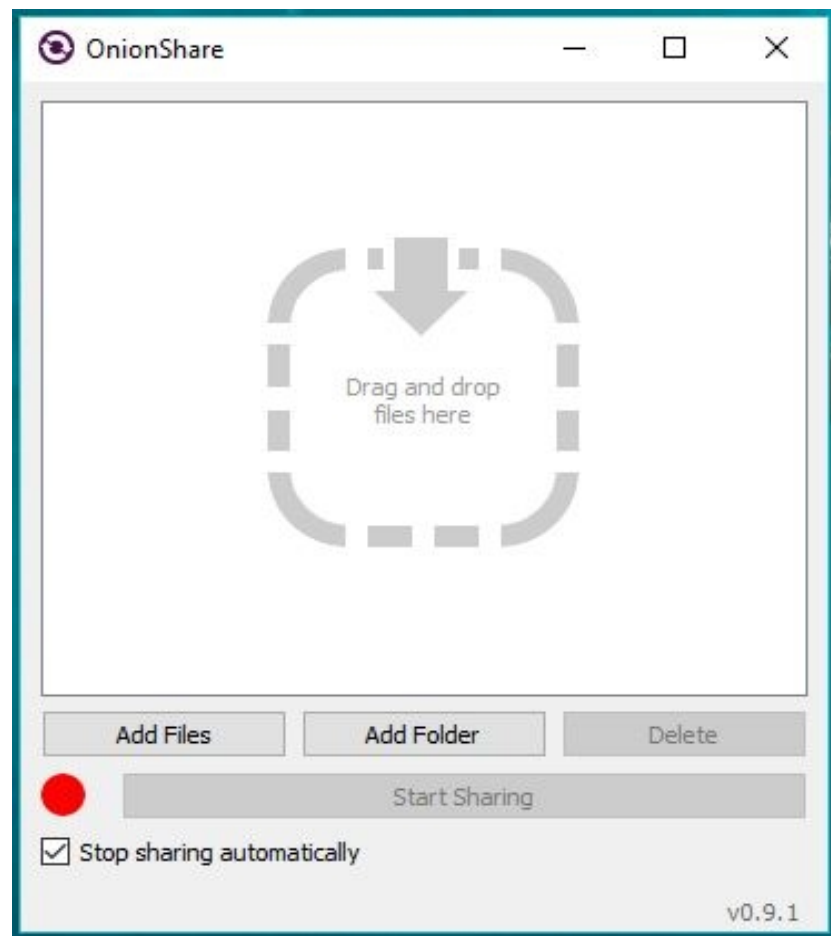
Onion Share

- Pros: Tor based exchange, Open sourced code, near limitless file size exchange. Both ends do not have to know each other to exchange, just URL link. Able to host files on your server for others to access. Single install system of application.

Onion Share

- Cons: Tor based exchange. Need to have tor browser system installed to use. Files only exchange not folders. Can be slow exchange on large files based on tor exchange traffic.

Onion Share

- https://onionshare.org/

- https://github.com/micahflee/onionshare/wiki
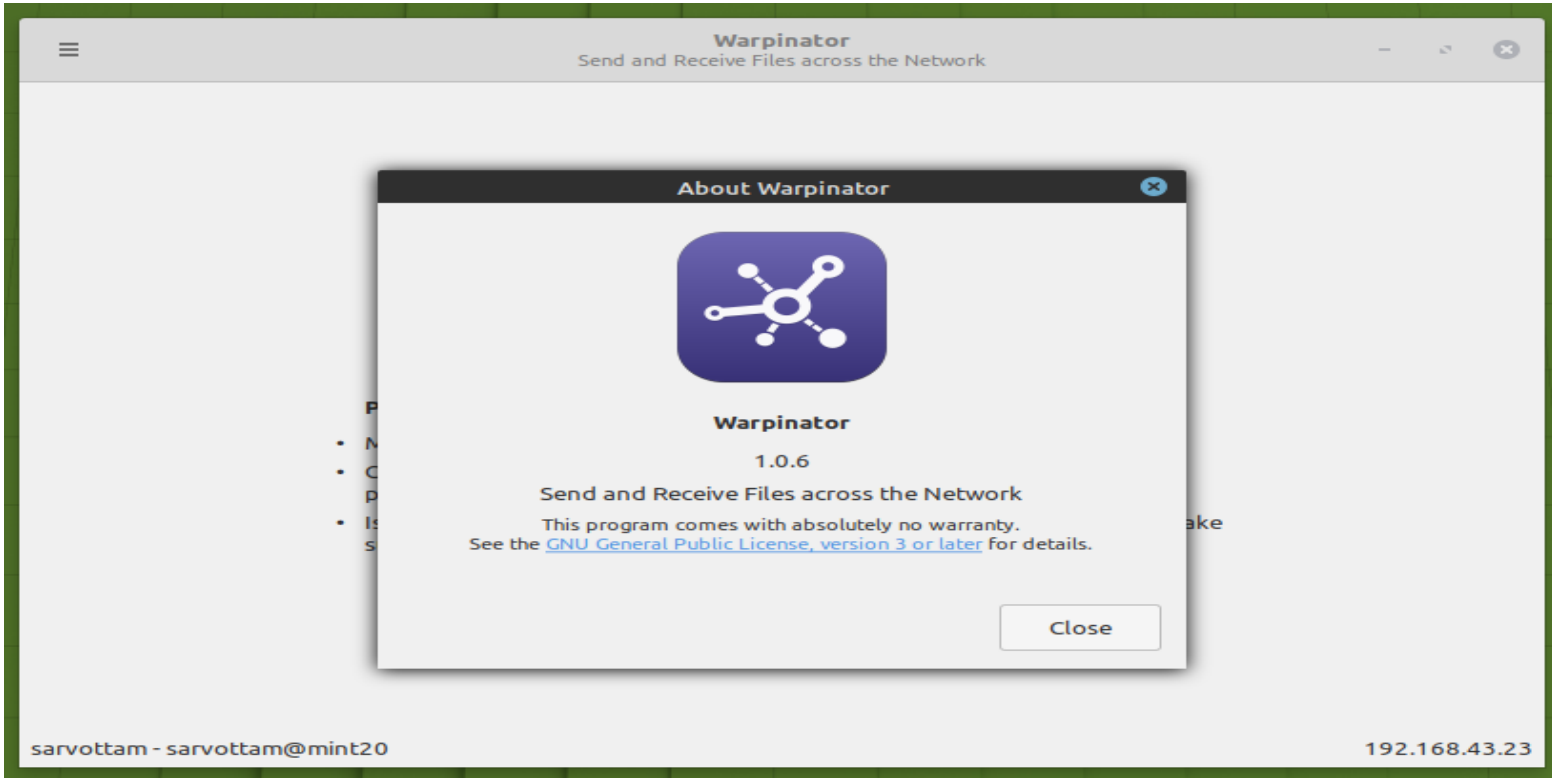
Warpinator

Warpinator

- Developed by Linux Mint group.
- Drag and Drop type GUI Front-end.
- Default on Linux Mint 20, was called Giver on Linux Mint 6.
- Similar to OnionShare and Wormhole in function.

Warpinator

- Pros: Open Source, Quick file transfer.

Warpinator

- Cons: Open Source, new to the market, requires python 3. Not fully encrypted data on source or destination.

Warpinator

- https://github.com/linuxmint/warpinator
-
- https://www.reddit.com/r/linuxmint/comments/h8x93l/how_to_install_warpinator_on_other_linux_distros/

Hybrid
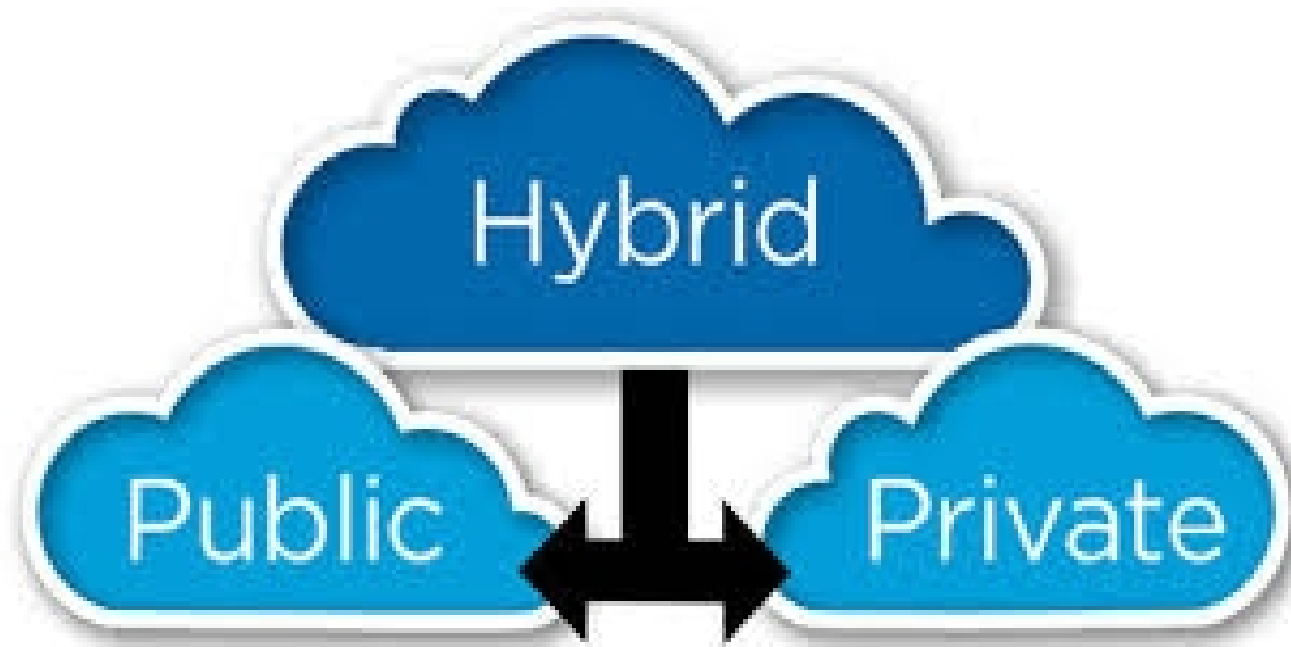
Hybrid type

- btsync

- spideroak

- others

Resilio Sync / BTSync

Resilio Sync / BTSync

- Peer to peer based file/folder exchange system. Based on the modified version of the Bitorrent protocol. Encrypted during exchange, AES-128 keys. Multi OS, free and paid versions.

Choose folder

/home/user/files/downloads

- 📁 dev
- 📁 etc
- 📁 **home**
  - 📁 **user**
    - 📁 **files**
      - 📁 **downloads** ✓

New Folder
Open
Cancel

Add folder

×

Secret [████████████████████████████████████] Generate

Path /BTSync/folders/8bit

📁 **boot**

📂 **BTSync**

    📂 **folders**

        📂 **8bit**

        📁 **cloud**

        📁 **projects**

📁 **dev**

Cancel   Add

Resilio Sync / BTSync

- Pros: Peer to Peer bit torrent based system. Encrypted between end, mesh network topology. Stye UPnP exchange is needed. Freemium.

Resilio Sync / BTSync

- Cons: Not fully open sourced, some exchanges are done with a relay owned by Resilio Sync company. Freemium.

Resilio Sync / BTSync

- https://www.resilio.com/individuals/

- https://www.resilio.com/sync-business/

- https://en.wikipedia.org/wiki/Resilio_Sync

SpiderOak

SpiderOak

- An online backup and file hosting service that allows users to access, synchronize and share data using a cloud-based server. Encrypted cloud storage and client-side encryption key creation, so SpiderOak employees cannot access users' information.

SpiderOakONE

| Dashboard | Backup | Manage | Sync | Share |

Back | Hide System Files | Undo | Save

Search this device...

Select Categories

- [ ] Desktop
- [ ] Documents
- [ ] Email
- [ ] Movies
- [ ] Music
- [ ] Pictures

Select Specific Files and Folders

Name	Size	Kind	Last Modified
▼ ■ /	- -	Drive	05/19/17 8:43 AM
▶ ☐ Applications	- -	Folder	05/19/17 8:46 AM
▶ ☐ Keybase	- -	Folder	05/19/17 8:40 AM
▶ ☐ Library	- -	Folder	05/07/17 9:45 AM
▶ ☐ System	- -	Folder	03/28/17 9:04 AM
▼ ☐ Users	- -	Folder	09/20/16 2:19 PM
▶ ☐ Admin	- -	Folder	01/29/16 8:43 AM
▶ ☐ Guest	- -	Folder	04/17/17 3:21 PM
▶ ☐ Mike	- -	Folder	05/19/17 5:17 PM

Storage Space   Remove Data   Account Size: 2GB

89.54 MB Used   1.910 GB Free

Upgrade

✔ Connected   ✔ Run Now

Username: mfinch@protonmail.com   Device: iMac   Version 6.1.5   Preferences   Account   Help

SpiderOakONE — □ ✕

| Dashboard | Backup | Manage | Sync | Share |

Overview | Activity | Actions | Completed | Details

Devices ?

⬆ ░░░░░░
307.63MB

Status

Backup ☁
- Activity — Waiting to receive initial updates from server
- Remaining — 2 item(s) (211.04MB)
- Schedule — Frequency - Automatic

Sync 🔁
- Activity — Waiting
- # of Syncs — 1
- Schedule — Frequency - On Backup Schedule

Share ↗
- Activity — No Shares Setup
- # of Shares — 0
- Schedule — Frequency - On Backup Schedule

Pause Uploads | Clear Upload Queue

Storage Space   Remove Data   Account Size: 250GB   Upgrade   ✓ Connected   ✓ Run Now

4.761GB Used   245.239GB Free

Username   Device: ░░░░░   Version 7.0   Preferences   Account   Help

SpiderOak

- Pros: Encrypted cloud storage and client-side encryption key creation, so SpiderOak employees cannot access users' information. US based company.

SpiderOak

- Cons: (do you believe them?) Closed source code, discontinued using the phrase "zero knowledge" on encryption. On August 1, 2018, the warrant canary on SpiderOak's website briefly vanished.
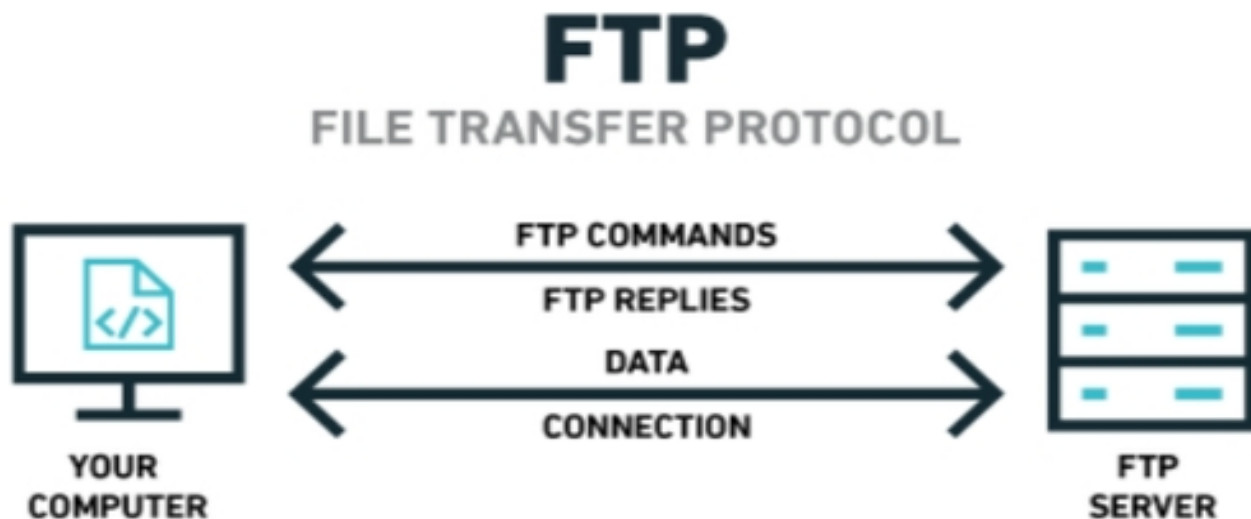
SpiderOak

- https://spideroak.com/

- https://en.wikipedia.org/wiki/SpiderOak

- https://www.cloudwards.net/spideroak-vs-dropbox/

Carry with you

USB / SSD portable drive

FTP/SFTP

Others?

?

Things that you should have

- Ease of access to client and data.

- Security, encrypted between you and other machines

- Able to keep your data yours, and remove if wanted.

- Data encrypted on all storage location, only you should have the key.

Final thoughts

- Do your own research as well.

- What would like to see?

Questions

- You got them, I may be able to answer them.

- https://en.wikipedia.org/wiki/ Comparison_of_file_synchronization_software

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