



# Backups in a Busy World



Mark Schulman

# What We'll Talk About

- Why do we need backups?
- Backup techniques



# The Problem

- All hard drives eventually fail
- Test performed by BackBlaze.com:
  - Data center with 41,213 hard drives
  - Some drive models had a 26% annual failure rate



<https://www.backblaze.com/blog/best-hard-drive/>

# Other Ways to Lose Your Data

- Computer failure
- Accidental deletion
- Computer loss or theft (especially laptops)
- Fire or flood
- Malware





## Your Files has been Encrypted!

### What Happened to My Computer?

Your important files are encrypted.

Many of your documents, photos, videos, databases and other files are no longer accessible because they have been encrypted. Maybe you are busy looking for a way to recover your files, but do not waste your time. Nobody can recover your files without our decryption service.

### Can I Recover My Files?

Sure. We guarantee that you can recover all your files safely and easily. But you have not so enough time.

You can decrypt some of your files for free. Try now by clicking <Decrypt>.

But if you want to decrypt all your files, you need to pay.

You only have 3 days to submit the payment. After that the price will be doubled.

Also, if you don't pay in 7 days, you won't be able to recover your files forever.

We will have free events for users who are so poor that they couldn't pay in 6 months.

### How Do I Pay?

Payment is accepted in Bitcoin only. For more information, click <About bitcoin>.

Please check the current price of Bitcoin and buy some bitcoins. For more information, click <How to buy bitcoins>.

And send the correct amount to the address specified in this window.

After your payment, click <Check Payment>. Best time to check: 9:00am - 11:00am GMT from Monday to Friday.

Once the payment is checked, you can start decrypting your files immediately.

### Contact

If you need our assistance, send a message by clicking <Contact Us>.

We strongly recommend you to not remove this software, and disable your anti-virus for a while, until you pay and the payment gets processed. If your anti-virus gets updated and removes this software automatically, it will not be able to recover your files even if you pay!

Contact Us

About Bitcoin

How to buy Bitcoins

TIME TO PAYMENT RELEASE:

**3 DAYS**

TIME TO LOST YOUR ARCHIVES:

**5 DAYS**



Send **\$300** worth of bitcoin to this address:

1KoWzXydNnrRfu2mcSbY6n7mnevkvQ6WBU

COPY

CHECK PAYMENT

DECRYPT

# What If You Lost All Your Data?

- Documents
- Photos
- Videos
- Letters
- Spreadsheets
- Financial documents





# You Might Get Lucky #1

If the computer has failed but the hard drive is OK:

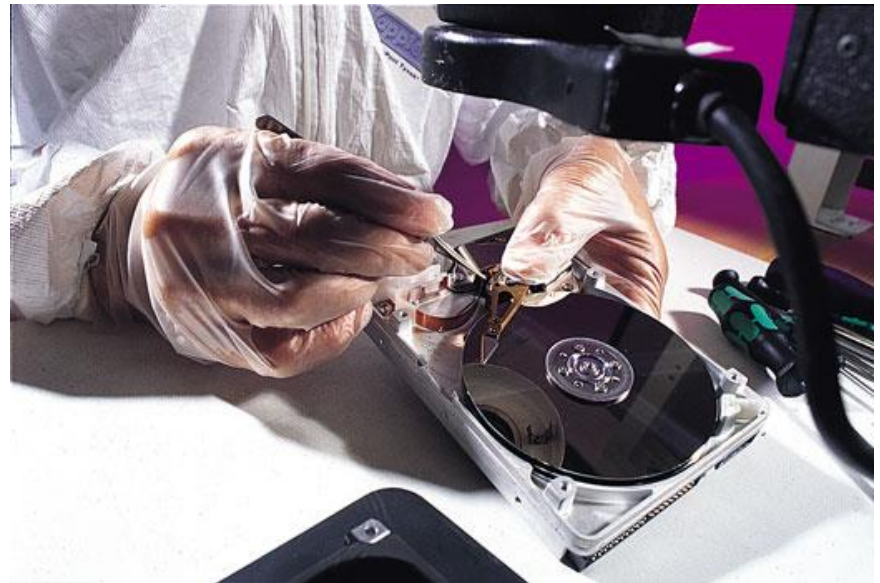
- A friend or computer shop can probably fish data off the hard drive
- Cost: \$0 - couple hundred



## You Might Get Lucky #2 (Sort of)

Even if the hard drive has failed:

- A data recovery service may be able to recover some or all of your data
- Very specialized work
- Very expensive





# Sometimes Your Luck Runs Out



# Backups

# What Is a Backup?

- Backup: a copy of your data
- Ongoing process
- Most people don't make backups
- Nothing else will do



# Words to Live By



If you don't make backups, you don't own your files. You're just borrowing them from Fate.



# The Ideal Backup

- Convenient
- Reliable
- Secure
- Inexpensive



# Rule of Thumb

Your backups should conform to the 3-2-1 rule.

**3** copies of your data

**2** different media

**1** off-site



# Backup Strategy #1

**Flash Drive, External Hard Drive, or NAS**

# Copy Files to a Flash Drive or Ext. Hard Drive

- Make sure all important files are copied to an flash drive or external hard drive
- Easiest with synchronization software



# Synchronization Software

- Looks for new/changed files and copies to flash drive or hard drive
- Only copies files that are new or different
- My favs:



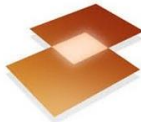
**FreeFileSync**

<https://freefilesync.org/>



**GoodSync**

<https://www.goodsync.com/>



**SyncBack**

<https://www.2brightsparks.com/syncback>



# DEMO!

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# Configuring Backup (1 of 3)



Enter the folder  
you want to back  
up

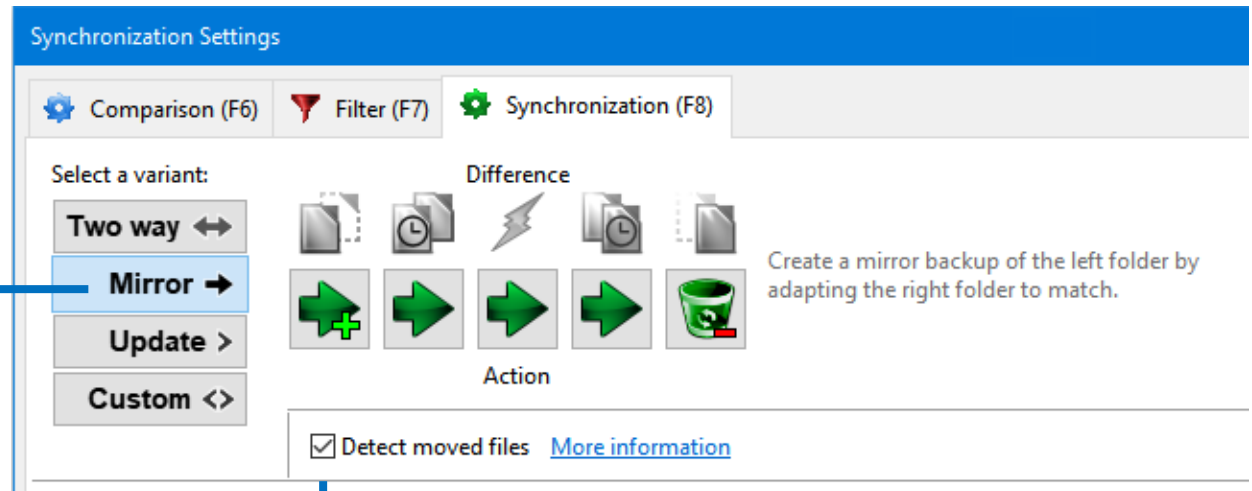
Enter the folder  
that represents  
your backup drive

# Configuring Backup (2 of 3)

Display the Synchronization options by clicking the green gear icon:



Click Mirror



Synchronization Settings

Comparison (F6) Filter (F7) Synchronization (F8)

Select a variant:

Two way ↔

**Mirror →**

Update >

Custom <>

Difference

Action

Detect moved files [More information](#)

Create a mirror backup of the left folder by adapting the right folder to match.

Check the box to detect moved files



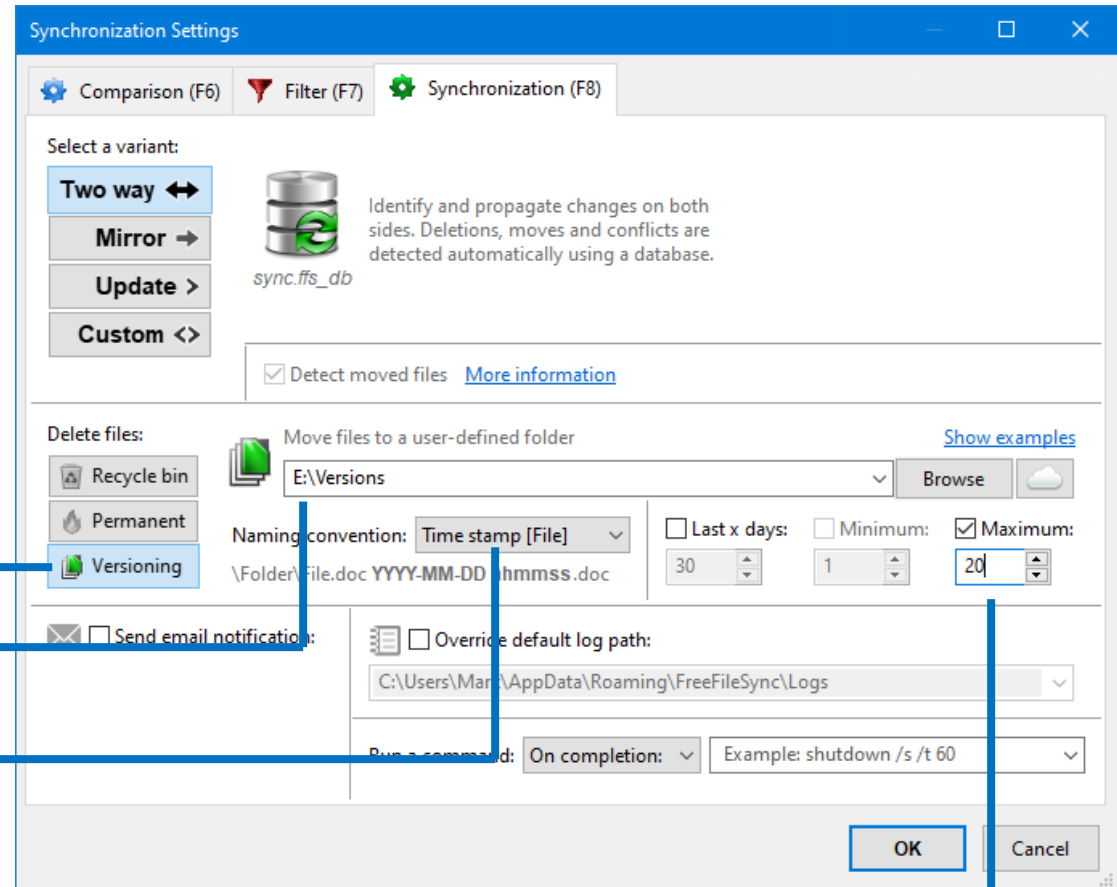
# Configuring Backup (3 of 3)

Click Versioning

Enter a path on backup drive where you want to put the versions

Select Time stamp [file]

Set maximum number of versions, if you want by clicking the Maximum checkbox and entering the maximum number of versions you want to keep for each file.



# Backup Software

- Specialized software for creating backups easily



## A Few Points

- Have ***at least*** two backup hard drives and alternate between them (more is better)
- Don't leave backup drives connected when not in use
- Store external drives as physical your computer as possible
- Schedule your backups like any important event in your life



# WD Elements Portable External Hard Drive



2 TB \$61.99

4 TB \$94.99

<https://www.amazon.com/dp/B0713WPGLL>

# Network Attached Storage (NAS)



# Advantages / Disadvantages

## Advantages:

- Fast
- Easy

## Disadvantages:

- Susceptible to fire/flood
- Have to remember to do them





# Backup Strategy #2

**Online Storage**

# Cloud Storage Services



Google Drive

2 TB

\$100/yr



OneDrive

1 TB

\$70/yr



DropBox

2 TB

\$120/yr



pCloud

2 TB

\$96/yr

# Online Services - Warning!



Do not depend on online storage as your only backup

*See their TOS*

# Backup Strategy #3

## **Online Backup Service**

# Online Backup Services

- Software on your PC watches for files to change
- Changed files are copied to backup service over the Internet
- All data is encrypted



# Free Online Backup Services

- You may be able to use a free service if you have a very small amount of data (2 - 15 GB)
- Business model: Hoping you'll upgrade



# Paid Cloud Backup Services

- Enables you to back up huge amounts of data
- Most have plans for multiple computers



# Online Backup Services



COMPUTERS	STORAGE	PER YEAR
Unlimited	5 TB	59.62
1	Unlimited	\$70.00
1	Unlimited	\$120.00
1	Unlimited	\$58.99



# Advantages / Disadvantages

## Advantages:

- Very easy: Set it and forget it
- Immune to fire/flood
- Versioning

## Disadvantages:

- Ongoing cost
- Initial backup can take days
- Restore can take days



# System Backup

# System Backup

- Frequent backups are usually only data
- Every so often make a system backup
- Popular programs (free):
  - Macrium Reflect
  - AOMEI Backupper
- Resulting file is very large
- Rescue flash drive required





# DEMO!

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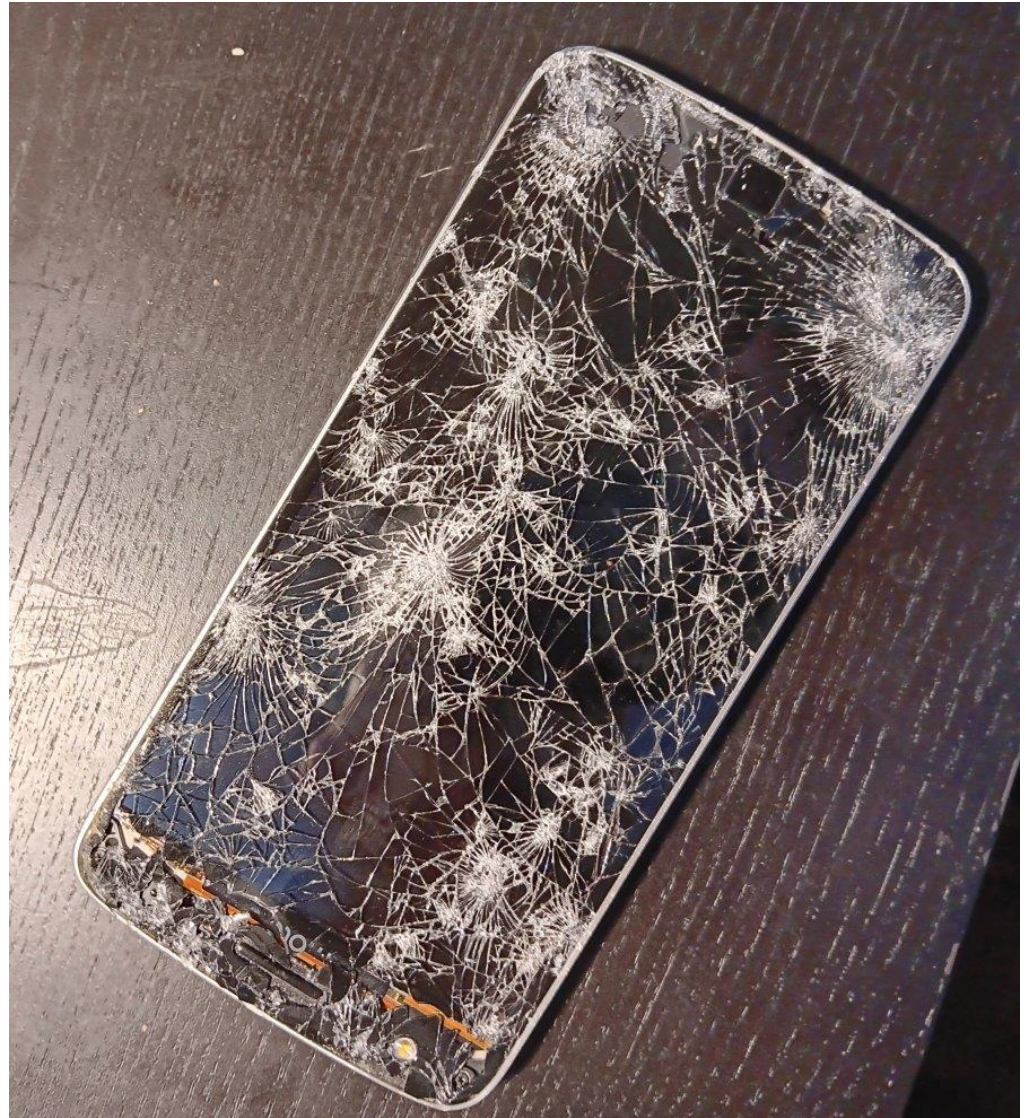
# Phones

# Photos on Your Phones



# Bye-Bye Phone

Millions of cell phones are lost, stolen, or broken each year





# Photos on Your Phones

- Your photos shouldn't exist only on your phone!
- *Seriously! Do we have to explain this?!*
- Back up photos automatically: iCloud (iOS) or OneDrive (iOS and Android)
- Move to computer occasionally





# Messaging Backup

- Consider backing up messaging apps
  - WhatsApp, Signal - backups built-in
  - SMS - lots of apps available



# Preparing for the Inevitable

- Plan NOW for what to do if your phone is lost
- Record phone make, model, IMEI number, customer service number, Apple ID or PIN
- Make a list of passwords to change
- Consider a cell phone tracking feature
- Make sure you can handle 2-factor authentication



# Final Thoughts

# What Do I Do?

- Every Sunday back up to one of three ext. hard drives using GoodSync (“3 copies”) with versioning
- Every Monday take last week’s backup to work (“1 off-site”)
- Important/active files stored on OneDrive, backed up to my computer, and to external hard drive. (“2 different media”)
- Hard disk image every 6 months (Macrium Reflect)

# Backup Drive





# Backup Drive



4 TB Western Digital  
Elements Portable  
External Hard Drive

\$95 on Amazon as of  
10/14/2022

# Backup Log

## BACKUP LOG

DATE	PERFORM BACKUP	TAKE TO WORK	BRING HOME
12/22/21	1	<del>2</del>	<del>2</del>
12/26/21	2	1	3
1/22/22	3	2	1
1/8/22	1	3	2
1/16/22	2	1	3
1/23/22	3	2	1
1/29/22	1	3	2
2/6/22	2	1	3
2/13/22	3	2	1
2/20/22	1	3	2
2/27/22	2	1	3
3/6/22	3	2	1
3/13/22	1	3	2
3/19/22	2	1	3
3/26/22	3	2	1
	1	3	2

# Encryption

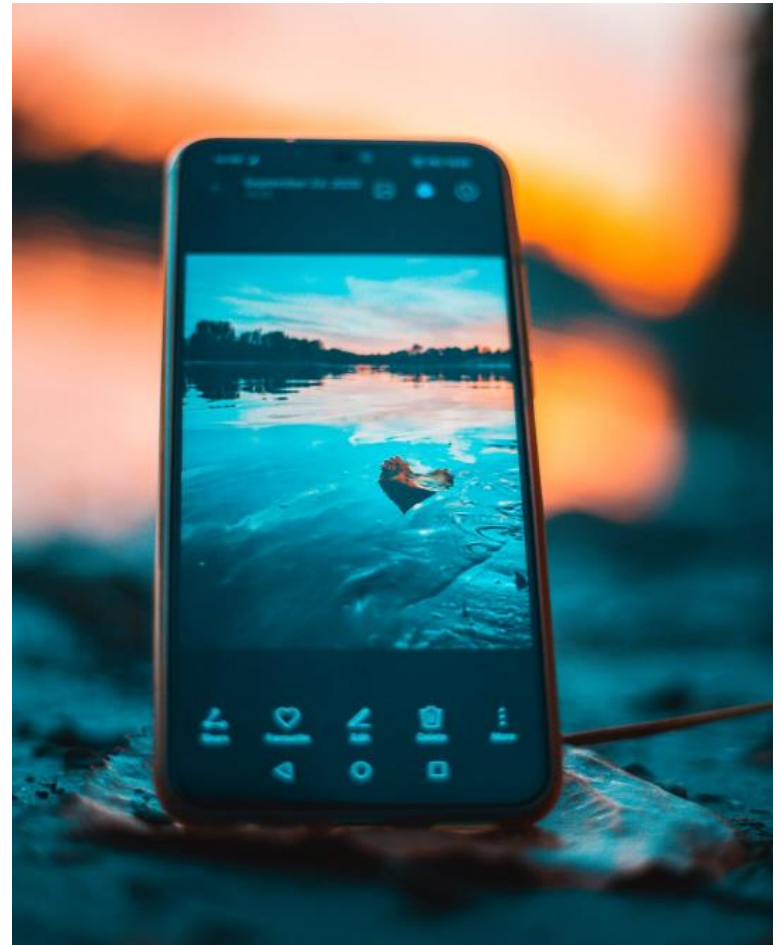
- All backup hard drives are fully encrypted.
- Encryption software: VeraCrypt
- (Store the password someplace other than just your computer.)





# Phone: What Do I Do?

- Phone photos backed up to OneDrive
- No messaging backup
- Review my “lost phone” list every 3 months



# Where to Get It

FreeFileSync	<a href="http://freefilesync.org">freefilesync.org</a>
AOMEI BackUpper	<a href="http://www.aomeitech.com">www.aomeitech.com</a>
Macrium Reflect	<a href="http://www.macrium.com/reflectfree">www.macrium.com/reflectfree</a>
VeraCrypt	<a href="http://veracrypt.fr">veracrypt.fr</a>
iDrive	<a href="http://www.idrive.com">www.idrive.com</a>
BackBlaze	<a href="http://www.backblaze.com">www.backblaze.com</a>
CrashPlan	<a href="http://www.crashplan.com">www.crashplan.com</a>
Carbonite	<a href="http://www.carbonite.com">www.carbonite.com</a>

# Final Advice

JUST DO IT.



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