

Security Audit

Do a ...

SECURITY AUDIT

And see where you need to improve your security.

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Why this session?

You may be aware of many of the risks to your online safety
BUT

- What are the most likely risks?
- How can you protect yourself?
- What should you focus on first?

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References

- Microsoft Digital Defense Reports 2020 & 2021
- Australian Cyber Security Centre (ACSC) Annual Cyber Threat Report July 2019 to June 2020
- Verizon Data Breach Investigations Report 2020
- SOPHOS 2021 THREAT REPORT: Navigating cybersecurity in an uncertain world
- SANS Top New Attacks and Threat Report, 2021
- McAfee Labs Threats Report, November 2020
- [The biggest mistakes people make with their passwords](#)

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Caveats

- Reports tend to focus on businesses rather than individuals
- Many of the high-rated risks are probably not relevant to us as individuals - I have “cherry-picked”.
- Reports such as that by Microsoft have an inherent bias due to the way they collect data (eg via MS Defender returns to Microsoft)

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III Cybercrime is an Industry

The cyber security landscape is constantly changing

- The ‘bad guys’ are looking for the easiest way to obtain an income ... So they adapt to where that is most likely*
- Cybercrime is now an industry of its own with a budget rivalling that of nation-states*
- Cybercriminals occupy a role that may be at any level of the industry.*

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Roles in cybercrime

Ransomware taxonomy

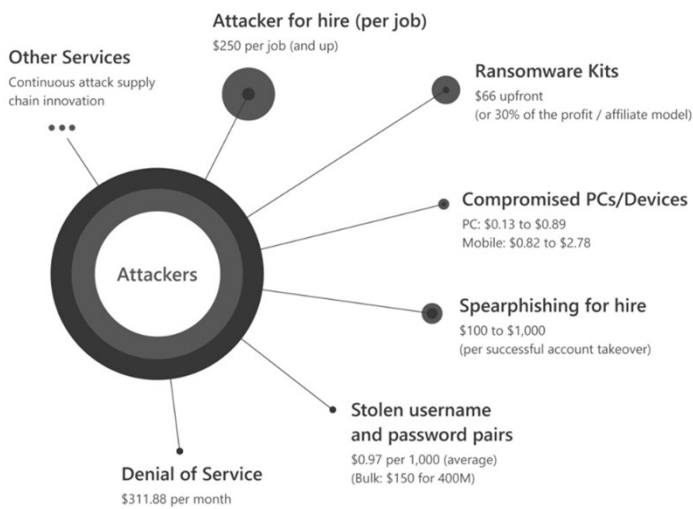
Primary role	Description
Develops	Writes the malware
Deploys	Sends phishing emails, deploys ransomware
Provides access	Malware that loads other malware, or a group that sells access as a service
Manages/operates	Leadership of a group (such as MAZE cartel membership) and/or function that provides coordination (such as managing or operating a central extortion leak site)
Publicly reported connection	A publicly reported connection exists

Microsoft Digital Defense Report 2021

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Average prices of cybercrime services for sale



Attackers for hire start at \$250 USD per job.

Ransomware kits are \$66 USD or 30% of the profit.

Compromised devices start at 13 cents per PC and 82 cents per mobile device.

Spear phishing for hire ranges from \$100 to \$1,000 USD.

Stolen username and password pairs begin at 97 cents per 1000 on average.

Microsoft Digital Defense Report 2021

Common attacks we'll look at

- Phishing & other malicious emails
- Ransomware
- Data breaches

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Threat 1: Phishing & other malicious emails

Phishing is a common way to get a foot in the door.

Be aware of the risks and learn how to identify phishing.

Ignore or delete all phishing – do not respond in any way and avoid opening phishing emails and messages if possible.

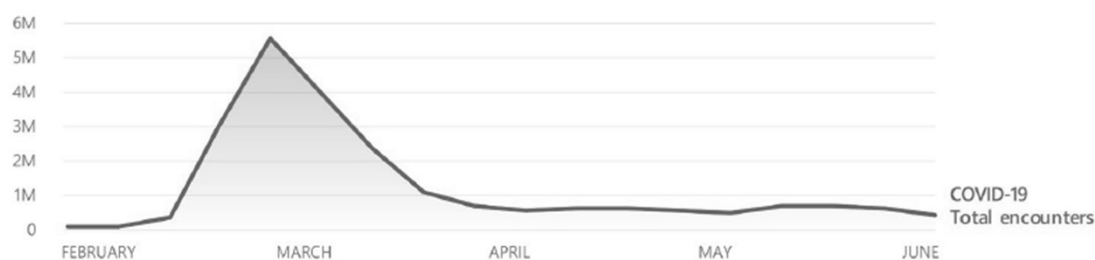
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Phishing follows the issues of the day

- COVID-19! – Fear, Uncertainty
- Zoom calls
- Vaccines, RATs, masks ...

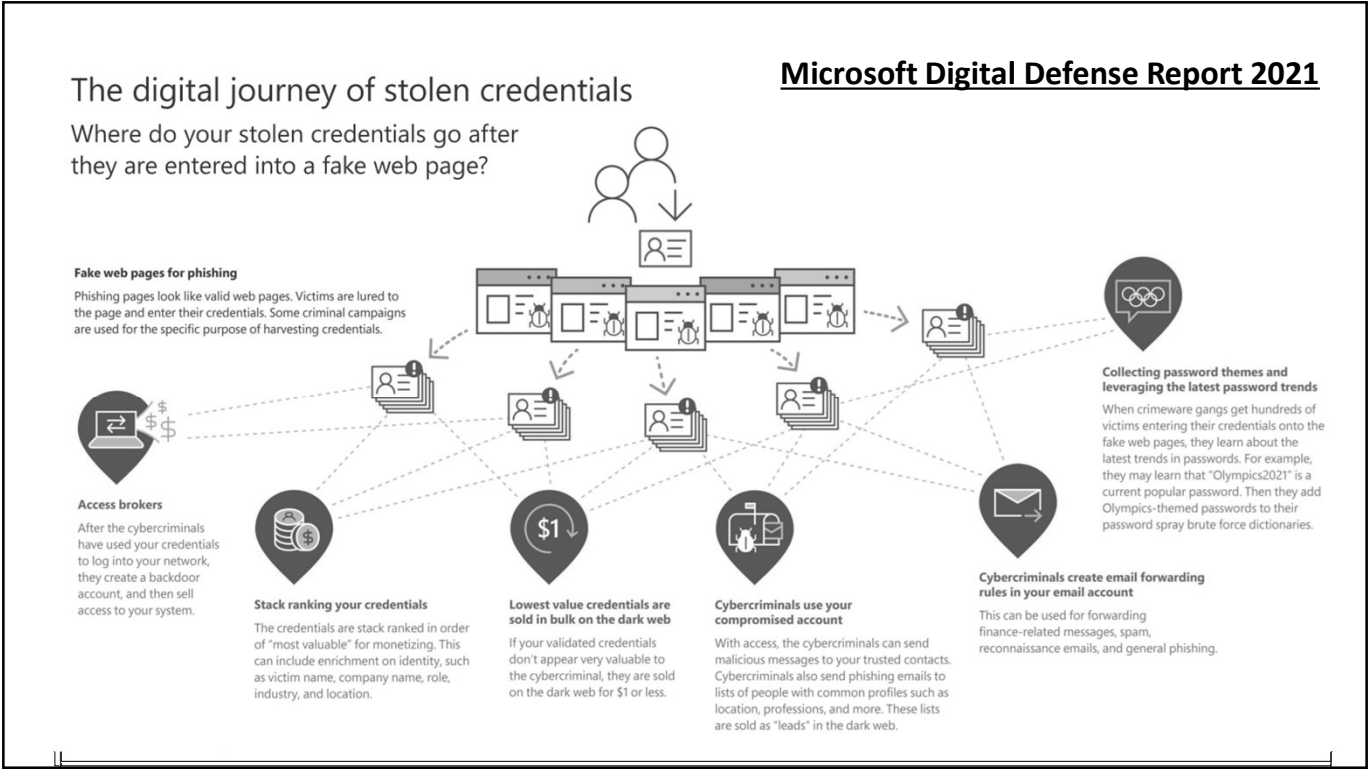
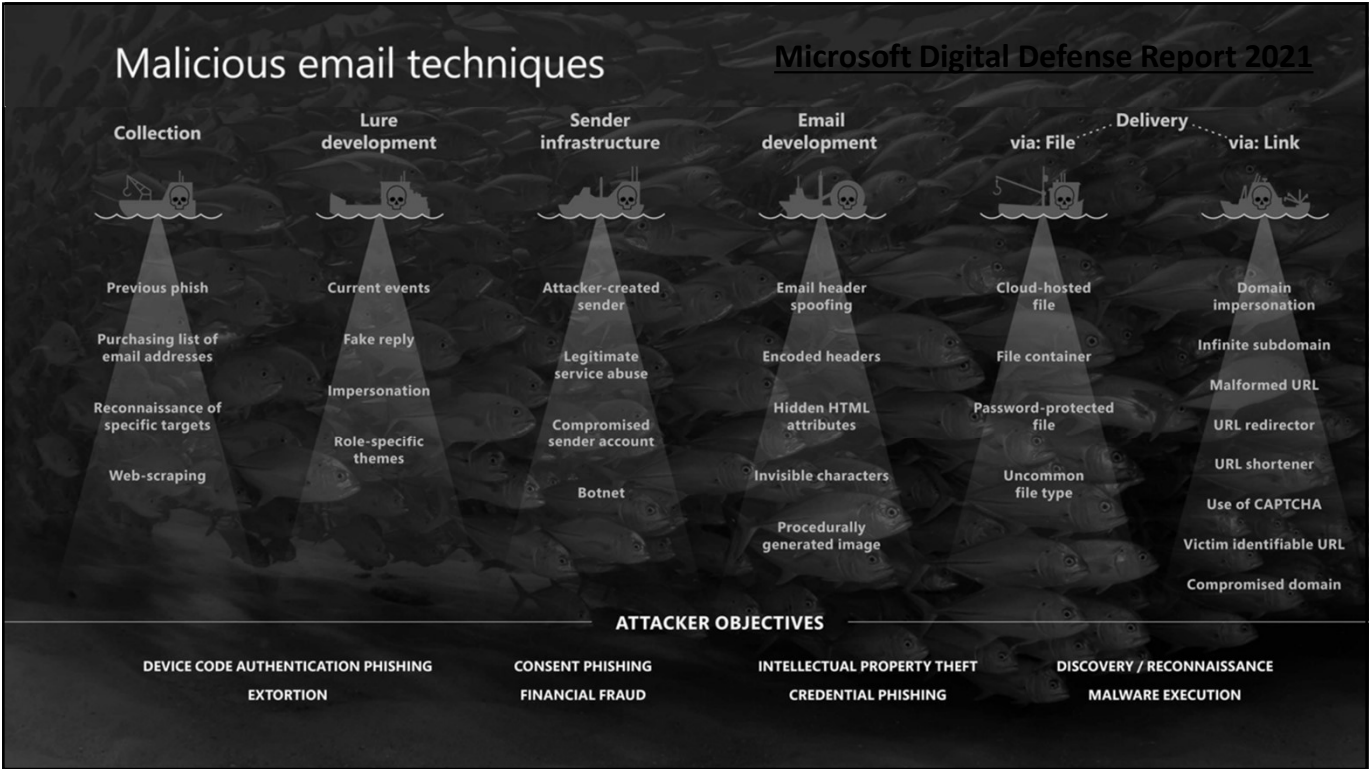
COVID-19-themed attacks: United States

Microsoft Digital Defense Report 2020



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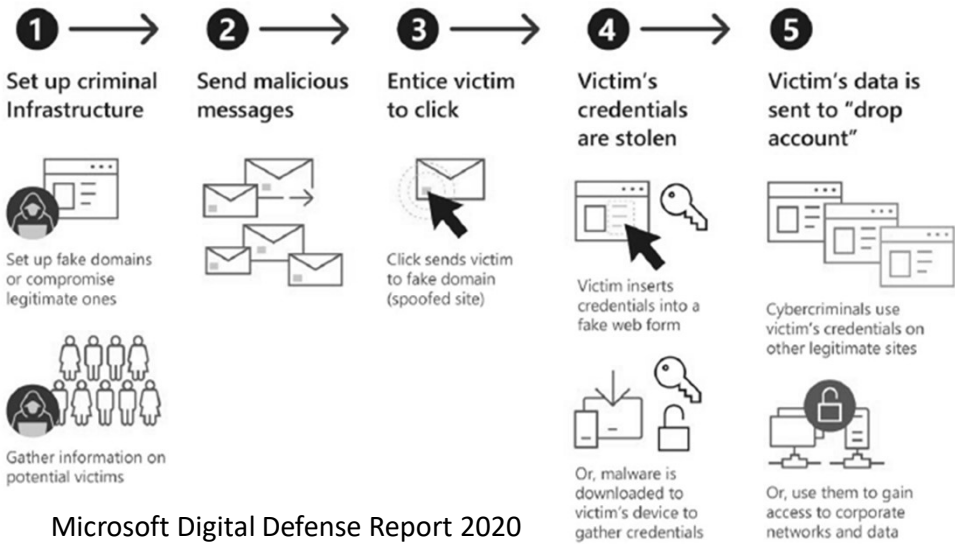
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Credential phishing

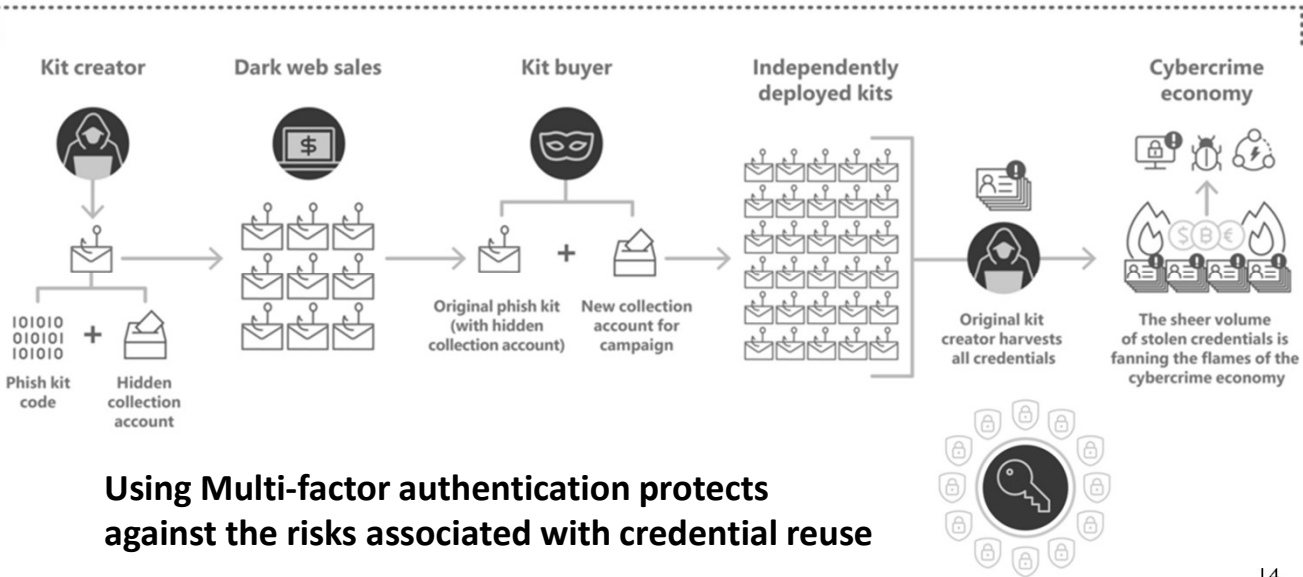
Credentials = username + password



Phish kits and credential harvesting

Phish kits: enabling credential harvesting at scale

Microsoft Digital Defense Report 2021



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How significant a risk?

Up until a few years ago, cybercriminals focused their efforts on malware attacks because they provided the greatest ROI.

More recently, they've shifted their focus to phishing attacks (~70%) with the goal of harvesting user credentials.

Microsoft Digital Defense Report 2020

ACSC

Australian Cyber Security Centre

ACSC Annual Cyber Threat Report - 2020-2021.pdf

COVID-19 themed malicious activity

COVID-19 Phishing Emails

Superannuation Scams

Online Shopping Scams

Cybercriminals often take advantage of topical situations to benefit from vulnerable victims.

Cyber actors research global trends and emerging events along with browsing social networking sites to identify potential targets for malicious activity.

Cyber actors socially engineer messages, or otherwise tailor their approach to conduct targeted or widespread campaigns.

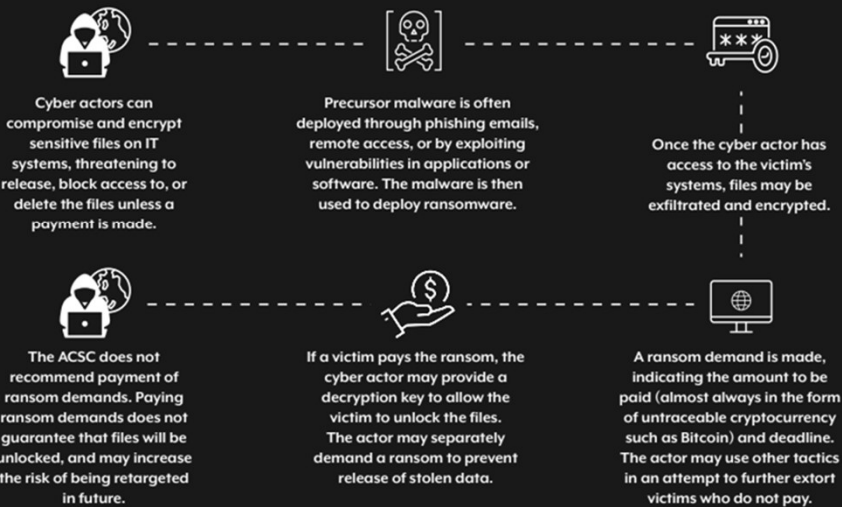
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Threat 2: Ransomware

Cybercriminals often explore documents on the target system to work out how much ransom to demand before locking or encrypting the data

Ransomware

* Malicious cyber activity varies; the diagram below is one example of how cyber actors conduct ransomware attacks against devices and systems.



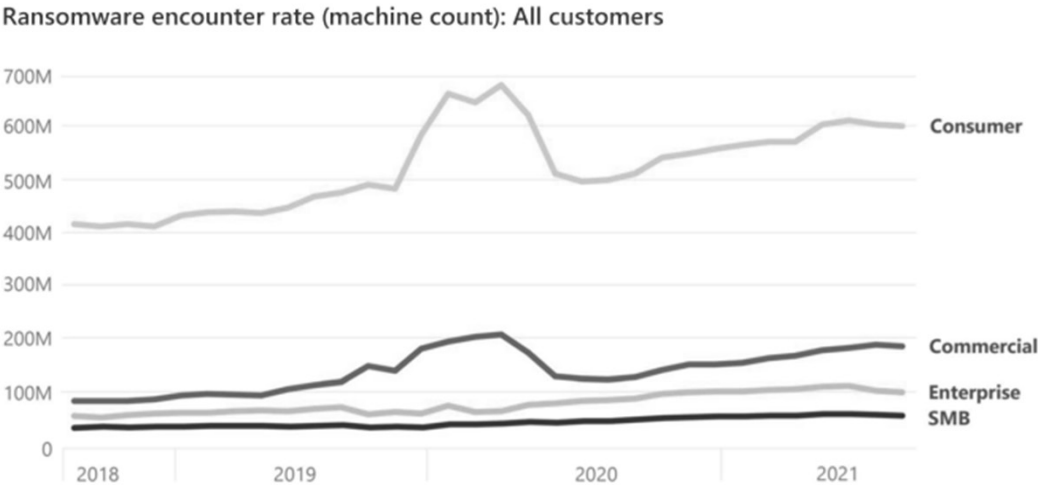
ACSC Australian Cyber Security Centre

ACSC Annual Cyber Threat Report - 2020-2021.pdf

*Note the ACSC is aware of cases where payment was made, but the decryption process took longer than other recovery options available.

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Is ransomware a threat for individuals?



Microsoft Digital Defense Report 2021

How can I prevent a ransomware attack?



Install software updates



NEVER click on suspicious links



NEVER open suspicious attachments



Backup your devices regularly

Microsoft Digital Defense Report 2021 also recommends using 2FA and encryption of “data at rest”

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Avoid ransomware

Ransomware can infect your devices in the same way as other malware or a virus. For example:

- visiting unsafe or suspicious websites
- opening emails or files from unknown sources
- clicking on malicious links in email or on social media
- downloading software from untrustworthy sites.



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Common signs you may be a victim of ransomware:

- pop-up messages requesting funds or payment to unlock files.
- you cannot access your devices, or your login doesn't work for unknown reasons.
- files request a password or a code to open or access them.
- files have moved or are not in their usual folders or locations.
- files have unusual file extensions, or their names or icons have changed to something strange.

Check with your family first to see if they made any changes.

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Cybercrime –Microsoft key takeaways

- **Identity and password/phishing attacks** are cheap, and on the rise. Why would an attacker break in when they can log in?
- **Distributed denial of service (DDoS) attacks** are cheap for unprotected sites—about \$300 USD/month.
- **Ransomware kits** are one of the many types of attack kits designed to enable low-skill attackers to perform more sophisticated attacks.

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Cybercriminals follow the money

- Australia is relatively wealthy
- We have high levels of online connectivity
- We are increasing delivery of services through online channels
- This make it very attractive and profitable for cybercriminals

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Threat 3: Data Breaches

Unlike the previous 2 attacks, this one doesn't target us directly.

However, the impact is just as severe.

Credentials (username + password & sometimes other data) are stolen from websites we have an account with.

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What is a data breach?

A data breach comes as a result of a cyber attack that allows cybercriminals to:

- gain unauthorized access to a computer system or network
- steal the private, sensitive, or confidential personal and financial data of the customers or users contained within.

With most data breaches, cybercriminals want to steal:

- names, email addresses, usernames, passwords, and credit card numbers.
- But they will steal any data that can be sold, used to breach other accounts, steal your identity, or make fraudulent purchases with.

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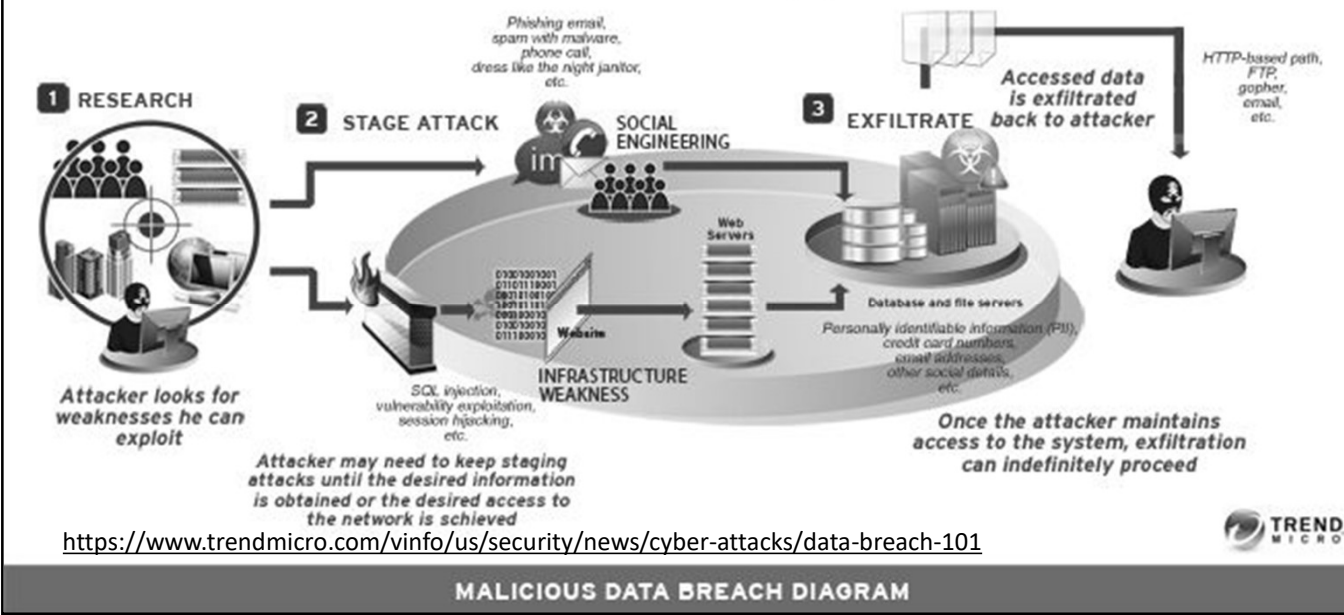
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Notable data breaches

Largest breaches		Recently added breaches	
	772,904,991 Collection #1 accounts		5,890,277 RedDoorz accounts
	763,117,241 Verifications.io accounts		362,426 BTC-Alpha accounts
	711,477,622 Onliner Spambot accounts		73,944 ShockGore accounts
	622,161,052 Data Enrichment Exposure From PDL Customer accounts		6,783,158 Open Subtitles accounts
	593,427,119 Exploit.In accounts		111,002 Upstox accounts
	509,458,528 Facebook accounts		303,877 Carding Mafia (December 2021) accounts
	457,962,538 Anti Public Combo List		5,470,063 Aditya Birla Fashion and Retail accounts

<https://haveibeenpwned.com/>

How a data breach happens



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What happens with the stolen data?

“Credential Stuffing”

- The “bad guys” try the stolen usernames and passwords on multiple other sites
- If a password has been reused, it may work!

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Now we've seen the top risks ...

What do we need to do to keep safe?

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Count 1 point for each one you do

Protect against Phishing

1. Be aware of scams – recognise scams, social engineering and phishing. Don't open links unless you're sure they're safe. Take care with social media networks.
2. Enable multi-factor authentication when it's available
3. Update devices and systems – turn on automatic operating system updates
4. Use strong passwords or (better) passphrases
5. Use a different password / passphrase on each account
6. Don't remember your passwords – manage them properly
7. Consider using a virtual private network (VPN) if connecting from an insecure wifi

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HOW SAFE IS YOUR
PASSWORD?

Time it would take for a computer to crack a password with the following parameters

	Lowercase letters only	At least one uppercase letter	At least one uppercase letter + number	At least one uppercase letter + number + symbol
6	INSTANTLY	INSTANTLY	INSTANTLY	INSTANTLY
7	INSTANTLY	INSTANTLY	1 MINUTE	6 MINUTES
8	INSTANTLY	22 MINUTES	1 HOUR	8 HOURS
9	2 MINUTES	19 HOURS	3 DAYS	3 WEEKS
10	1 HOUR	1 MONTH	7 MONTHS	5 YEARS
11	1 DAY	5 YEARS	41 YEARS	400 YEARS
12	3 WEEKS	300 YEARS	2,000 YEARS	34,000 YEARS

businessaustralia.com

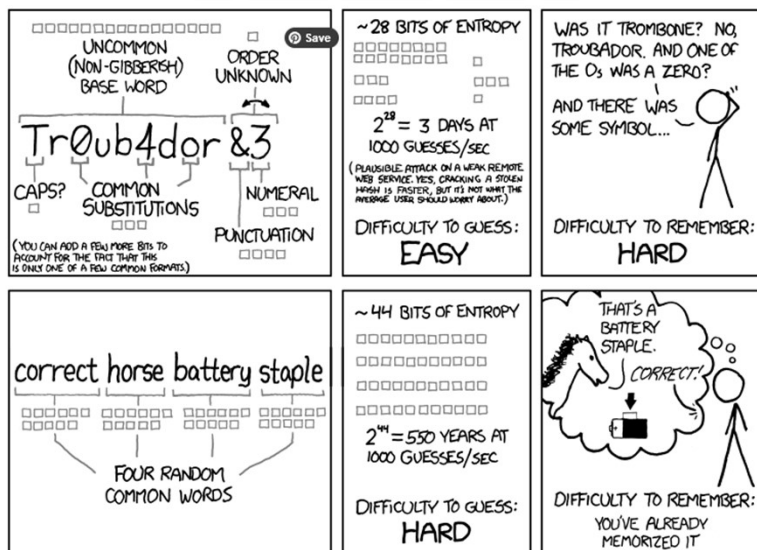
- This refers to “brute force” cracking. Other forms of cracking look for:
- Common passwords
- Passwords that are easy to guess:
 - dog’s name,
 - mother’s maiden name,
 - kids’ names etc
- Any password that has been cracked before!

The biggest mistakes people make with their passwords

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Passphrases



Suggestion:

Use an app such as:

- APG2Go
- Mantra

to generate a starting point.

Modify as needed to include:

- upper case
- numbers
- special characters

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Protect against Ransomware

Count 1 point for each one you do

1. Update devices and systems – turn on automatic operating system updates
2. Enable multi-factor authentication when it's available
3. Backup data regularly
4. Regularly save a backup offline
5. Always run good anti-malware software
6. Restrict access to your devices with a keyboard lock
7. Reduce the chance of theft with a physical lock
8. Keep administrator privileges safe – use an “ordinary user” account
9. Turn on ransomware protection – if available

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Malware

- Viruses, trojans, worms, rootkits, spyware, bots, ...
- 'Anti-virus' software aims to trap all of these
- 'Real-time' operation relies on 'sniffing' out 'fingerprint' patterns in data – needs up-to-date 'fingerprint' data from the anti-virus vendor
- Regular scanning of your computer to look for any 'fingerprints' not identified initially

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Administrator accounts

- Your computer uses an administrator account to:
 - Install new software
 - Change permissions on your computer
- You should avoid using an administrator account for your day-to-day interactions

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Count 1 point for each one you do

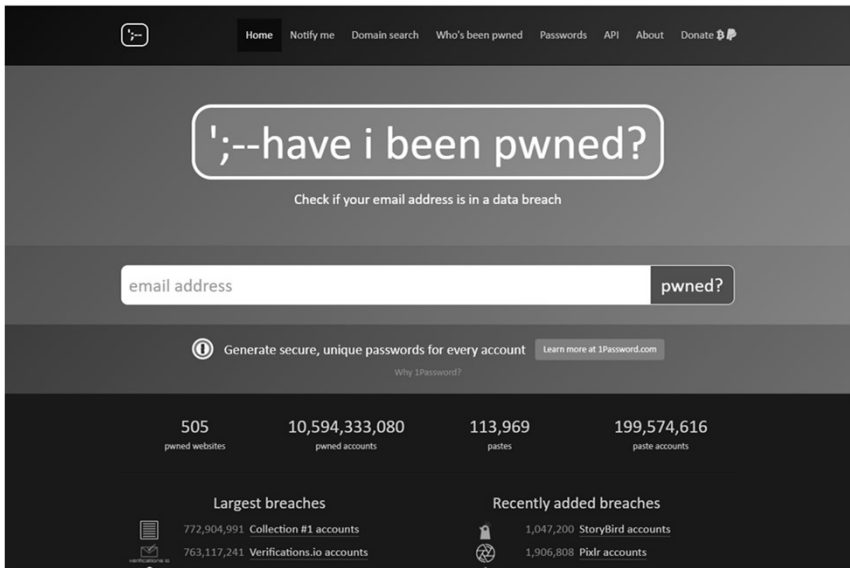
Protect against data breaches

- 1. Use a different password for every online account
- 2. Use a strong password / passphrase (>12 characters etc)
- 3. Use multi-factor authentication when available
- 4. Be aware of data breaches – subscribe to Have I Been Pwned for each email account you own
- 5. When you are notified of a breach affecting you, change your password for every affected account
- 6. Consider using a different email address for each account (eg Apple’s hidden email facility)
- 7. Be aware of scams – don’t respond to spam in any way

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Have I Been Pwned?

<https://haveibeenpwned.com/>



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What to do if you're in a data breach?

- Act immediately – the bad guys have had a lot of time to use your credentials
- Change your password for the account that was breached
- Change the password for any other account that used the same or similar password
- Make sure you use strong passwords (>12 characters, mixed alpha, numeric, special)
- Turn on 2FA if available for that account

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If your email account is hacked

You'll find out about this in a different way:

- E.g. Your contacts get spam from your email address

WHAT TO DO:

- Act immediately! See: <https://askleo.com/email-hacked/> for full details of what to do including:
- Try to recover your account
- Change your password
- Check your recovery information etc

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How did you go?

- Maximum score = $7 + 9 + 7 = 23$

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What do you need to know more about?

- | | |
|------------------------------|---|
| 1. Scams | 8. Anti-malware software (anti-virus) |
| 2. 2FA | 9. Physical protection for devices |
| 3. Updating | 10. Account privileges – admin vs user |
| 4. Passwords and passphrases | 11. Ransomware protection |
| 5. Password manager | 12. Data breaches and credential stuffing |
| 6. VPN | 13. Hidden email facilities |
| 7. Backups | 14. Spam |

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SUMMARY

- Online risks keep changing – we need to keep aware
- Major risks are:
 - Phishing
 - Malware that ransoms your computer or steals your credentials
 - Theft of credentials from online accounts
- You can set up automatic routines and develop habits that protect yourself!

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ANY QUESTIONS ?

Thank you for attending this
U3A presentation / demonstration

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