A brief guide to Passwords and Internet Security

What is a virus?

What is a Virus?

- Wikipedia definition:
 - "A computer virus is a type of computer program that, when executed, replicates itself by modifying other computer programs and inserting its own code. If this replication succeeds, the affected areas are then said to be "infected" with a computer virus"
- Strictly speaking a it's a virus only if it gets itself buried into a host program (e.g. Microsoft Mail) if it runs on its own its called a Worm
- People create Viruses for a number of reasons, profit (e.g. ransomware where it demands payment to restore your computer), political power, to demonstrate a vulnerability of a product, corporate gain, or just plain devilment.

A VERY simple virus example

- A simple program to print "Hello Mendlesham"
 - print ("Hello Mendlesham");
- Now with a virus
 - print ("Hello Mendlesham"); # the next line will delete your windows directory rendering your computer useless rmdir "C:/Windows";;
- Typically they are much more complex than this and include mechanisms for infecting other computers

Anti-Virus

Anti-Virus

- Attacks range from annoying e.g. sending an embarrassing email to everyone on your email contacts list to devastating e.g. encrypting your hard disk and only allowing you to access it if you pay a ransom.
- Viruses usually propagate as email attachments.
- Prevention
 - Be very wary of any email attachment.
- Protection
 - Always check that Anti-Virus software is installed on any PC you use and check that it is active.



Anti-Virus software

- Never rely on the Microsoft built-in Anti-Virus software or software that came 'Free" with your computer e.g. McAffee or Norton. Your license will expire after a year, it may not be working and you are NOT PROTECTED.
- We recommend that near the end of your free license, you uninstall the current Anti-Virus and install the free (Basic) AVG software instead.
 - Settings>Apps & features, then scroll down to the app you want to uninstall, left click on it and select uninstall
 - Go to https://www.avg.com/en-gb/free-antivirus-download and follow the instructions to install AVG.
- NEVER have 2 anti-virus software programs running at the same time.
- ALWAYS keep your Anti-Virus software up-to-date
- AVG will often ask if you want to upgrade to their Pay version, you almost certainly do not need to do this.

Passwords

How to get someone's password

- Guess it
 - 'brute force'
 - 'dictionary'

or

- Steal it
 - from you
 - from the network
 - from a company

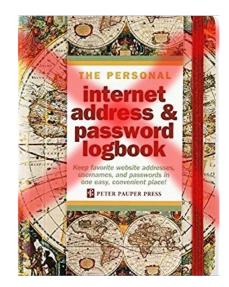
How to stop someone guessing your password and minimise the impact if it is stolen

- Make it long
- Include mixed cases (Cc), numbers, and odd characters (-,+ etc)
 But this makes them harder to remember so;
- Have a code
 - e.g. instead of Pass, use ssaP
- Use a phrase you can remember
 - e.g. mY-soN-waS-borN-iN-1990
- Have a different password for each site
 - e.g. for Amazon use Amazon-ssaP1

How to prevent your passwords being stolen

NEVER WRITE THEM DOWN !!!!!

- If you have problems remembering them, use a password vault
 - e.g. LastPass Cloud based or
 - KeePass for local storage or
 - MacPass



(demo of Keepass)

Pass the password

How do passwords get transmitted securely? The Secure Socket Layer

Certificate

MIIGkDCCBHigAwlBAgIRAP9bf/aQe6ieMG/1TSiJ60AwDQYJKoZlhvcNAQEMBQAwSzELMAkGA1UEBhMCQVQxE DAOBgNVBAoTB1plcm9TU0wxKjAoBgNVBAMTIVplcm9TU0wgUINBIERvbWFpbiBTZWN1cmUgU2l0ZSBDQTAeF w0yMzA5MTkwMDAwMDBaFw0yMzEyMTgyMzU5NTlaMB4xHDAaBgNVBAMTE2RIYmVuaGFtc2hlZC5vcmcud WswggEiMA0GCSqGSlb3DQEBAQUAA4IBDwAwggEKAoIBAQDDn+3JAcEHIpLsH3nw5TYRgBrkjy3qZ2MEUvbgNp FKfE+aQMkF1vc1MABn3K4k0X2eqOQ+CU8vEeoctPNYHUtGNbe0vjfcuSHhVbZnjd87Ri0PDo017F1yrPEo12F54y7 WP/2h9e2FuxhmoCTgDa2PXYpn/2h3avydmKFyJTngsIDAsCRc8OrINj7exZUXiBIISCzxDuATyIYf0Je0Go76e8lktvI+ XR1VtkN42pV0nP3IamUAY2jJgyg1YYDlbwgXWENRpWyzATqS4pj861Sw+WDMUMIdoKa+9fc7d+hx+lqB6blHsEz QLEA4++TrTMy8oJSwHu6zOLFw7CEnWWHLAgMBAAGiggKaMIICliAfBgNVHSMEGDAWgBTI2XhootkZaNU9ct5fC j7ctYaGpjAdBgNVHQ4EFgQUNEOT544mBRFqjdPCCahE3X34Q8IwDgYDVR0PAQH/BAQDAgWgMAwGA1UdEwEB /wQCMAAwHQYDVR0IBBYwFAYIKwYBBQUHAwEGCCsGAQUFBwMCMEkGA1UdIARCMEAwNAYLKwYBBAGyMQ ECAk4wJTAjBggrBgEFBQcCARYXaHR0cHM6Ly9zZWN0aWdvLmNvbS9DUFMwCAYGZ4EMAQIBMIGIBggrBgEFBQ cBAQR8MHowSwYIKwYBBQUHMAKGP2h0dHA6Ly96ZXJvc3NsLmNydC5zZWN0aWdvLmNvbS9aZXJvU1NMUINB RG9tYWluU2VjdXJIU2l0ZUNBLmNydDArBggrBgEFBQcwAYYfaHR0cDovL3plcm9zc2wub2NzcC5zZWN0aWdvLmN vbTCCAQYGCisGAQQB1nkCBAIEgfcEgfQA8gB3AK33vvp8/xDli509nB4+GGq0Zyldz7EMJMqFhjTr3lKKAAABiqyRP ZIAAAQDAEgwRgIhAI0UYHrN612J2dYa5ZSmQVHSD64GligEVGjEKbDzSVmsAiEA+ckg0aH3TKHXw/PdXw9dzYPInf ++cwpHjGCKY4+lzvsAdwB6MoxU2LcttiDqOOBSHumEFnAyE4VNO9IrwTpXo1LrUgAAAYqskT36AAAEAwBIMEYCI QCneEoMuwqBOhglOcBDziGwhRnlCdivEJ4zm20Sboa6KglhAOuWSEnF9FXMWW+sfJkwOgZSCrufn4Pmell32ZLN sLlgMDcGA1UdEQQwMC6CE2RlYmVuaGFtc2hlZC5vcmcudWuCF3d3dy5kZWJlbmhhbXNoZWQub3JnLnVrMA0G CSqGSIb3DQEBDAUAA4ICAQAKJ9zdY5P5xcrGlhp/3p/9Rk64YF9YzaDlf8RI5upCdeVZq4Vq/AkOdhHy19eq7i30mq uF8zWvJTqk2FzEeb6wOiVy9qU8hYfhBER8UAdfGzpnxazao9ksn+AMbL5hx4LXE2+akysxlO3ftpOmlatV3cOlmIAY 5nxbS/evcOr9U5+Ln7MgCL9C+49Hbtz260FFXFNTMd3FCg+1nzYY/+Zwfx5qdadof3ltzMyz/HBy/GrUePTgUNwf66 EdUHvt/bAltB6vEnPMzbjKcO0BXsAjcPbgncV20lcxD9JvTDV9F2AhxvIpRV0kfsH/QY4YYRv+Uj6LEwZB4hNooKpMK dr8wvNrb0Edr7i2OcXAUe5GzRxfu0KPFbXTU+AadfPAveMS4SQuv/cJuGR3DBuT1ZDDGzuQcjUJBRK3lGUoUjyGT HZQNme1SepXmZCyZ6DV+qqrYs21TLSluKAnlIC8Zz3GV3FoniSBpuA7DntbmzqpOE/hrhctupNrSL2vgyqt52FisnG9 1j6Um3EL2d90p9DQKzUx73sGMC4tTVYnB44PLZTkVk0l6Zf8s0dlvwBWqVKtCzlCz4c65Vu//Jw7auWDH2xMAZry bjFd0Ye2wnzqJzjPHgECoD3opbh4AUSEsvkf6P1Ls/NaxiwXVPEMiGWTilNpr3mNvv34U/w0BYkg==

Key

MIIEpgIBAAKCAQEAw5/tyQHBByKS7B958OU2EYAa5I8t6mdjBFL24DaRSnxPmkDJBdb3NTAAZ9yuJNF9nqjkPgIPL xHqHLTzWB1LRjW3tL433Lkh4VW2Z43fO0YtDw6NNexdcqzxKNdheeMu1j/9ofXthbsYZqAk4A2tj12KZ/9od2r8nZi hciU54LCAwLAkXPDqyDY+3sWVF4gSJUgs8Q7gE8pWH9CXtBqO+nvJZLbyPl0dVbZDeNqVdJz9yGplAGNoyYMoN WGA5W8IF1hDUaVsswE6kuKY/OtUsPlgzFDCHaCmvvX3O3focfpagem5R7BM0CxAOPvk60zMvKCUsB7uszixcOw hJ1lhywIDAQABAoIBAQCRwI3NLuZf542qKgWTy2OOhHEFC/y84gzvQtU31tBHu/kfR9e+5xxG353dxJlnS0KaPOHZ qtv5iRJyEwwgAat9Azb9jqBWbwVkO5Vs8FJ7elzGFCR4lcS6VUpVEKxKwU67SPAzhOVUt0KF7BmtaeN/psUhmTV/j BHtZbQcNMo7sIXv+JEaee9DZoSaMPXhVLVAR3XdsPT6t6sBMIwU9BkNZ4u6RhHe/lSDcUROYVQMSykkb9ZFThLp Ob8/pOqw365mIbY35rdIDMNuGy5mJIVw59LZ6FLzeo4YjS9UZ4mVYH86hVKR3Om4cqDJHECc095/Ayjn3NgbEo VsI0QvdO1BAoGBAP5+9OV6GpZfqtVLy27ewm7KIY0A/tLrrhOf05bXRmtbC3sBw3tNary6QkCbhVq0i+NDyPSIY2A 84D3YQQPabqbJeCwKHaQpYsFcpLjcQiO+f9mz2vHlN4ZlmybD5gfz3q/pDbdw7chkkUQv2Z7KiYH2sw8TJ1E19eK2 McWzHqhAoGBAMTH5vRRVYAGz0kWCzmE2NWKQkI7jfQRAIWKSu+bIWA3Xxqavu5fHMXrhwMqTza5zPNIfvg0 KButwGoGCGrEiVdZYKBhW1BWZiyOknNXfWSP29ibvwT1allAXdC8O0ycCbR8HWrYskrW4UbJJc9QFWwE3lHW6r Ek1vfyadsowtDrAoGBAL6oyjuo8IY7gbZuJCgZhryNffkvB7loi290S4Y0HTOMb9tlhNe5Nf/R4pSYbp13qV1HiSN5kk mlEbIDcyG54S/eu8LyiScydfLiz+Uvs5zf0HcAxOBQEz0Yw2tt947WNhAVxqa8GUX3RgerVlkmaHs5Yzei7RrdWn7GL IVqlSJBAoGBAI+/xExn+gCLePNYAh0jmc7ssBh4LuvDW9ExxCoi9g+2g2gl8T9rBbbjpn4+cx10P27dX7trRn1pwSzye UWdiwLfTMH8PNuEMiGMiRlvKS/EE4K5y6lQsCvLdH0edGczebd6D3dVE3GuZWTzXgaC5xNAvzOjv1BmrA727DN oJGC/AoGBAJwYUQ+DhfRkkCj0v4N4pSHFBCm7RXhtt02dfNk2cq2sW8J4CqblDJMhzPFXvY8NHo6yUhxTdhr4tcGJ jghOV37rhHu/ryJtr9aLxXeJw37GLSpGWuI55EOZtZ09nz00DUTkEVn08EvgNmLNhGf26wyai8MI4+SmJC/GgKy7e

How do I make sure its using SSL?

 Never put personal details into a site which starts with http rather than https – s means secure! Look for the padlock.



These sites encrypt all messages

Examples

http://example.com

https://example.com

What do companies do with your password?

- They are not allowed to store the cleartext version of your password.
- They must use a one-way encryption to create a version that cannot be decrypted back to the original cleartext.
- This is why they cannot tell you your password and you can only create a new one.

Two Factor Authentication

What is 2-Factor Authentication?

- 2 Factor Authentication (sometimes called Multi Factor Authentication or MFA) is based on "something you know (a password) and something you own (a mobile phone or email account) thus doubling the security of the connection. Increasingly web sites that involve money or private data will implement this.
- How it works
 - When you register on a web site, in addition to your password, you also register your email address and mobile phone number.
 - When you log into the site, it first asks for your password (factor 1), then sends you a text or email.
 - The text or email contains a code (usually a 6 digit number) that you must enter into the web site in order to log on. This confirms that whoever is logging in also has your mobile phone (factor 2).
- If you are in an area with poor mobile coverage, some sites allow you to specify an email address instead of mobile number. If you get a new phone, don't forget to update the number on the web sites that use it.

Advanced Security

- Use fingerprint or face recognition if possible on phones and laptops
- Face recognition only works on a few, more modern phones e.g.
 iPhone 11 and above, Google Pixel 6, Samasung Galaxy S21, OnePlus 9,
 Xiaomi Redmi Note 10 Pro

Security hints and tips

More hints and tips

- NEVER click on a link or attachment from an email you don't recognise even if it was forwarded from someone you know.
- Be especially wary of emails from Banks and Insurance companies.
 - —if in doubt ignore them, a genuine Bank will find another way of contacting you.
- Be wary of sites that ask for the entire password in financial transactions.

Software updates

- Always keep your software up to date;
 - Windows and MAC OSX usually update automatically, but phones often need you to do something
 - Browsers (Explorer, Chrome, Safari etc.) usually update automatically
 - Anti Virus usually updates automatically It's essential that you have one on a PC (search. AVG free), less so on phone/tablet though this will change.

Beware of offerings to 'fix' your PC

There have been many reports of scammers pretending to be
 Microsoft or BT calling to offer to help you speed up your PC or 'fix' it.

These are always BOGUS, just politely hang up.

• NEVER let ANYONE instruct you to install software, especially if it lets them control your PC e.g. TeamViewer

Phishing

Phishing email

Subject: Customer Notice: Your Account Summary - December 2018

From: "NatWest Bank plc" <noreply@alertsp.com>

Date: 17/12/2018, 08:41

To: Recipients <noreply@alertsp.com>



On Sunday 16 December 2018 at 11.27 EST
We detected unusual activity on your account and as a result,
for your protection, we temporarily suspended online access to your account.
To re- activate your online access please complete our verification form below.

Complete Verification Process

It is mandtory in such cases to complete our verification process, failure to adhere with our secirty policies may result to permernent account closure.

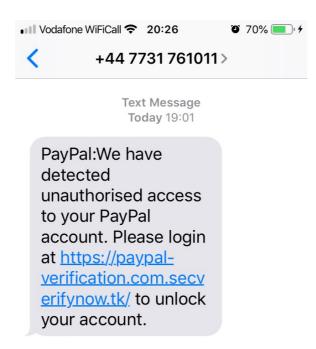
- 1) Content what is it about?
- 2) Sender
- 3) Spelling and Grammar
- 4) Links is there another way? use copy-paste to verify link, in this case it was; http://antiquecarriages.com/images/smilies/zzoundt.php
- 5) If in doubt delete

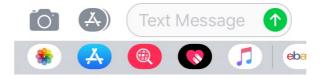
What to do if you get a phishing email

Do not click on any links

 Report it to the National Fraud and Cyber Crime Centre, Action Fraud by calling 0300 123 2040 or report it online on https://www.actionfraud.police.uk/

Phishing text

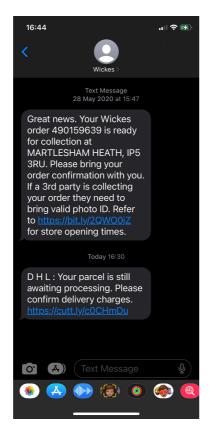


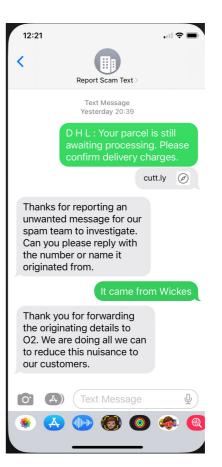


.tk is for Tokelau, a territory of New Zealand

What to do if you get a phishing text

• If you suspect a text is a scam, DO NOT CLICK on the link, but instead forward it to the National Cyber Security Centre on 7726.

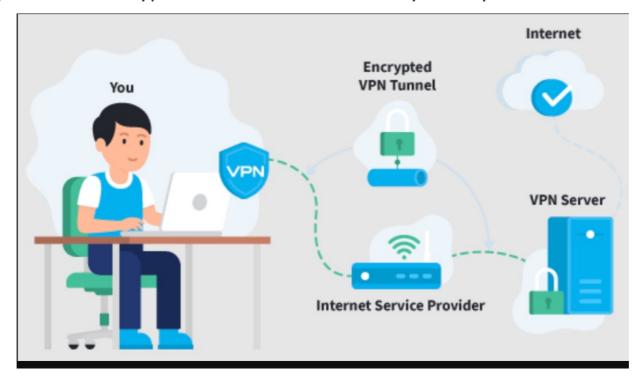




The Virtual Private Network (VPN)

What is a Virtual Private Network (VPN)

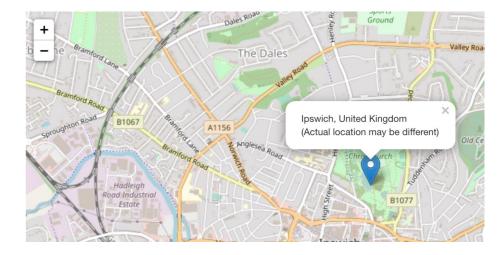
- A VPN is an encrypted tunnel through the internet between a client (e.g. your PC) and a VPN server that acts as a gateway to the internet.
- Internet traffic from your PC is encrypted and web sites can only track you to the VPN server.



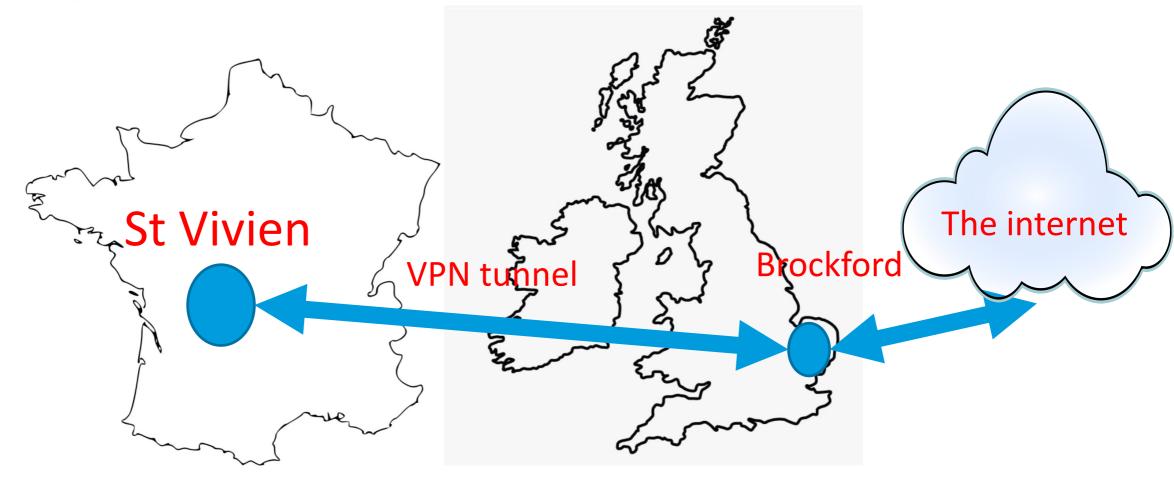
Do I need a Virtual Private Network (VPN)

- There are a lot of adverts on the TV trying to scare you into buying a VPN (NordVPN, Norton).
- They prey on the fact that:
 - 1. That you need to encrypt ALL of your Internet traffic.
 - 2. You need to avoid 'Trackers'
 - 3. Your location can be accurately tracked and
- This is overkill for regular consumers because;
 - 1. Most internet traffic is already encrypted (urls start with https)
 - 2. Browsers with Ad blockers prevent trackers
 - 3. The location is pretty inaccurate

Internet Service Provider (ISP)	BSkyB Broadband
Organization	Sky Network Services
AS number and name	AS5607 Sky UK Limited
User agent	Mozilla/5.0 (Macintosh; Intel Mac OS X 10_15_7) AppleWe Chrome/108.0.0.0 Safari/537.36



Why does Giles have a VPN?



The internet thinks we are in the UK!

Questions

https://www.avg.com/en-gb/free-antivirus-download