

The background is a dark blue gradient with a subtle pattern of white dots. Overlaid on the left side are several concentric circles and a large circular scale with degree markings from 140 to 260. Some of the circles have arrows indicating a clockwise direction. The text is positioned on the right side of the image.

CYBER SECURITY FOR HAMS

HOW YOU CAN KEEP YOUR INFORMATION AND DEVICES MORE PROTECTED

STAN ERIKSEN, K7BTA

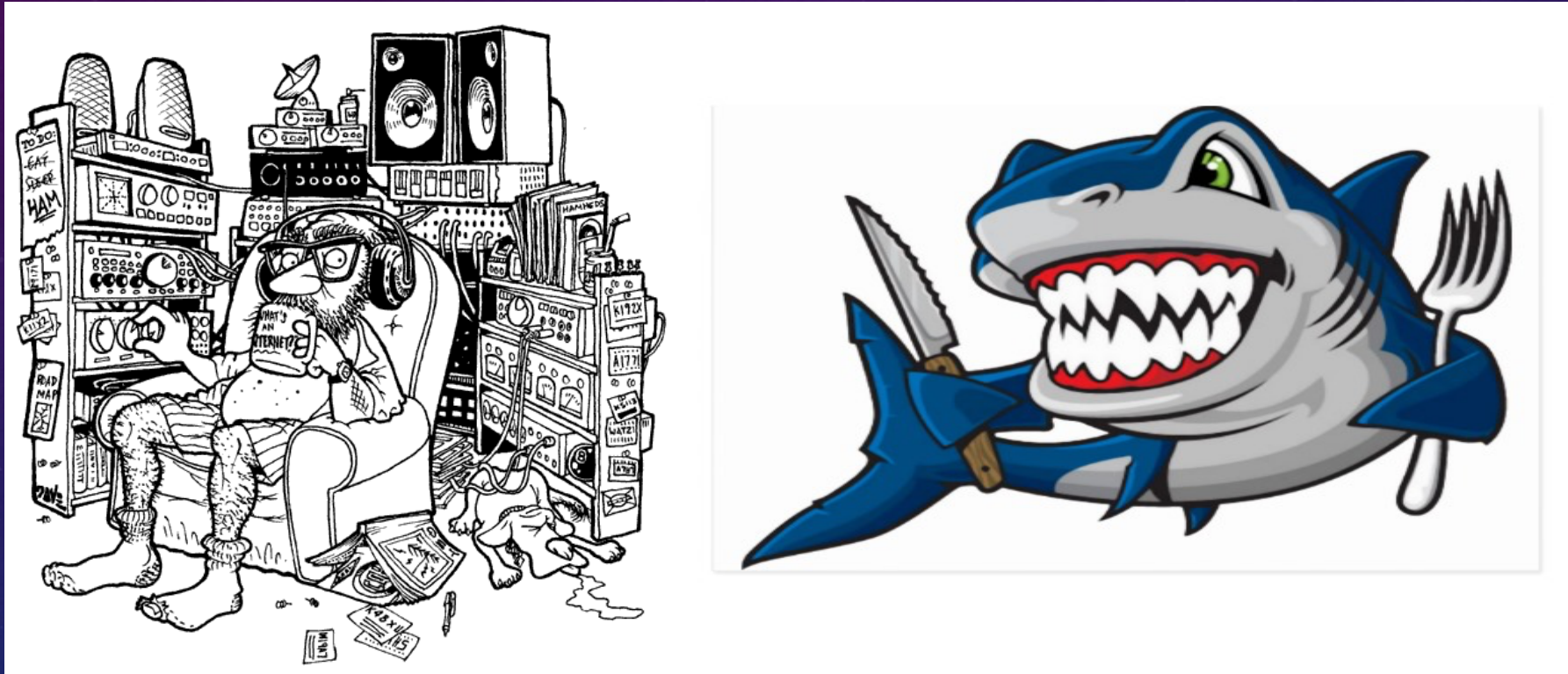
- I started out with a novice class license in 1986
- Degrees in Electronics Technology and Computer Science
- Worked as a software and network engineer for 33 years
- Worked as an engineer in information security for last 18 years
- Currently working in information security controls management

WHY DO I NEED TO WORRY ABOUT COMPUTER SECURITY IN HAM RADIO?

- Computers are being used more in Ham Radio
 - Use of Ham web sites like ARRL, CQ, QRZ and Ham radio manufactures and stores
 - Logs, QSL, Club sites
 - Mesh Networks, DMR
 - Basically any direct Internet connections
 - Computers, ham radios and mobile devices



BASICALLY THE INTERNET IS A DANGEROUS PLACE



It is no longer a kiddie pool but a vicious shark tank

BACKUPS, BACKUPS, BACKUPS

- If you can't lose it, then have at least 3-4 backups and at least one of them off site
- You can count your computer hard drive as one back up.
- Other types are external hard drives, CDs and DVDs
 - No matter what, one of your backups should be non-electromagnetic like CDs and DVDs
- Do not back up personal data to the cloud
- Identity and financial or anything that would be sensitive or harmful to you
- You can back up pictures, music, books, movies, basically anything the world can know



SO WHAT ARE THE DANGERS?

- Malware
 - Trojan horses
 - Viruses
 - Bot nets
 - Keyloggers
 - Ransomware
 - Exploits
- Identity theft
- Information theft
- Loss of all data



THE ONSLAUGHT OF MALWARE EVERYDAY!

- Some statistics for you from McAfee Labs last quarter
- 330,000,000 new malware a day for Windows computers and devices
 - Over 4 trillion total so far
- 11,000 new malware a day for Android phones
 - Over 40 million so far
- Under 1000 for a Mac – Apple takes care of them in operating system upgrades
- Under 100 for iPhones and iPads - The benefits of a closed system



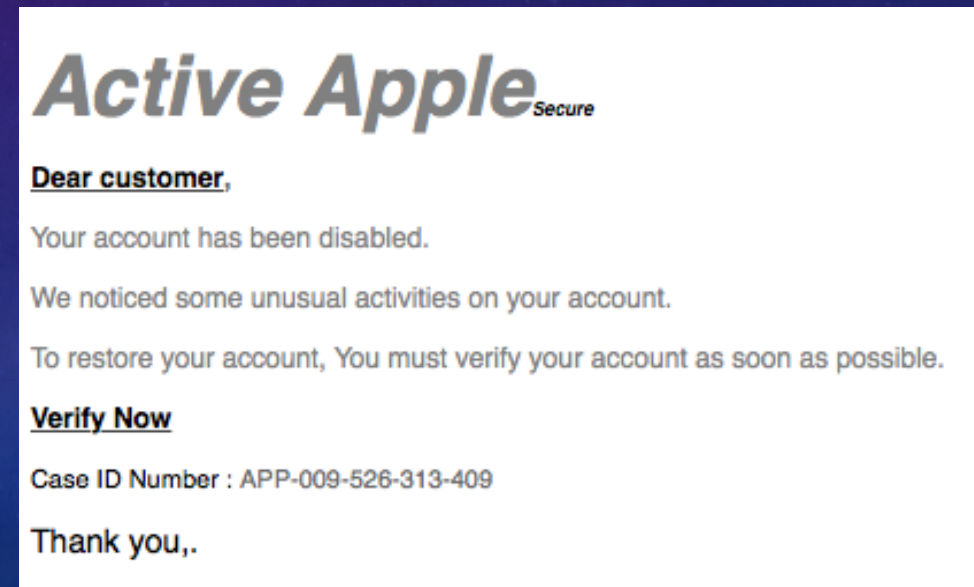
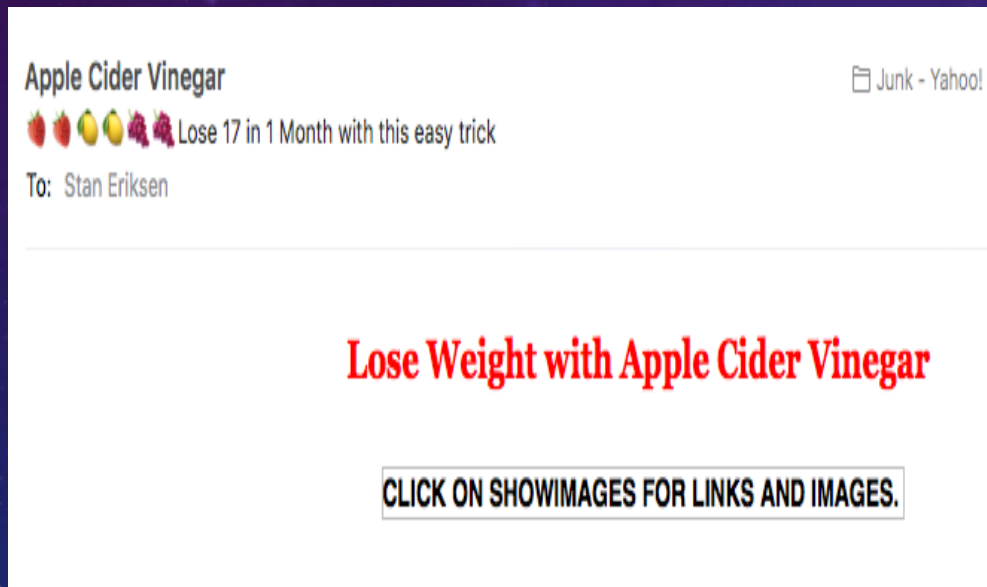
WHY SO MANY!

- People make money selling the code for malware on black market web sites and depending on how good it is can earn \$25,000 - \$100,000 per sale
- So people buy the code and specialize it to what they want and they are the ones that figure out how it is going to effect computers.
- This is why there are so many a day and so many variants in families of malware



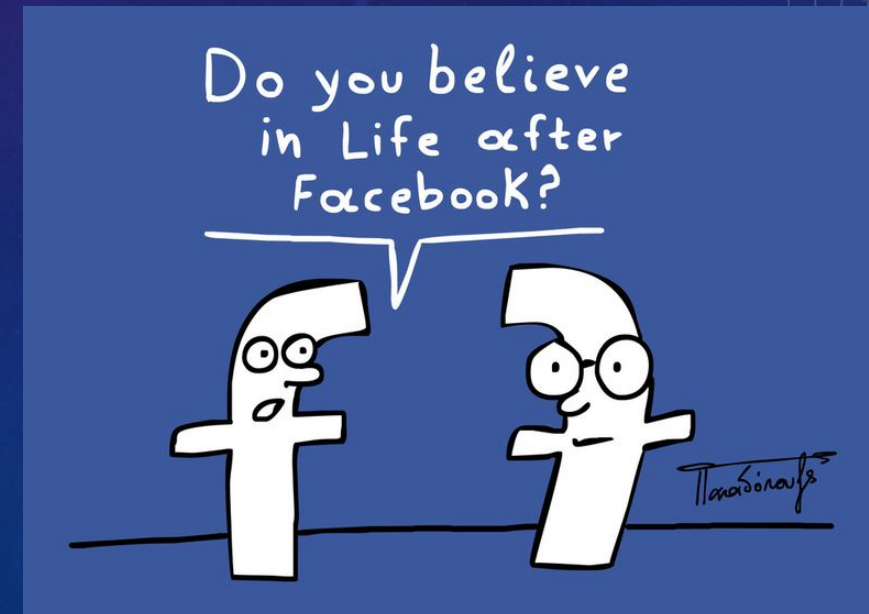
SO HOW IS THIS DONE?

- The #1 method is clicking on links in an e-mail
 - Never ever ever click on a link in an e-mail unless you are 100% sure it is real
 - Then still don't click on it!!!
 - Go directly to the web site instead to log in



OTHER WAYS TO BE INFECTED

- Legitimate web sites can be infected because hackers want to put their malware there
- Legitimate e-mail sites for the same reason
- Mistyped web site can take you to a another domain that is infected
 - Very common for hackers to buy misspelled domain names of popular sites hoping you will fall into their trap
 - Why many companies buy different misspellings to combat compromises for their customers
- Web search engines can be manipulated to have malware sites up higher on the search
- High traffic web sites like freeware/share ware sites, social media sites, adult sites
- Social web sites
 - Facebook, LinkedIn, Dropbox, Evernote, Yahoo
- Companies that have your personal information and are themselves hacked
 - Equifax, Uber, J.P. Morgan, Target, Home Depot, Sony, Anthem, McDonalds
- Government
 - Federal Human Recourses, Securities Exchange Commission, State Department, FEC



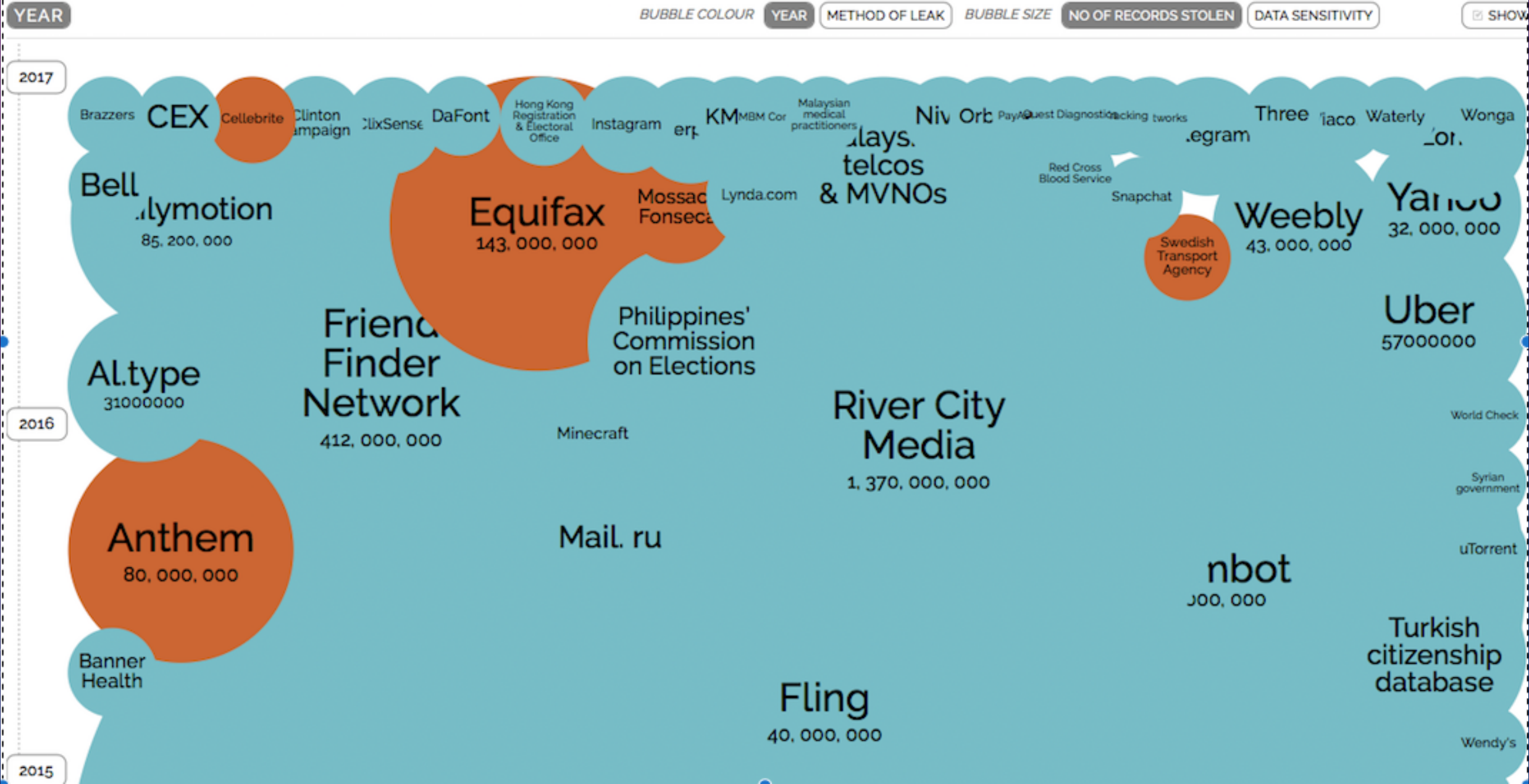
World's Biggest Data Breaches

Selected losses greater than 30,000 records

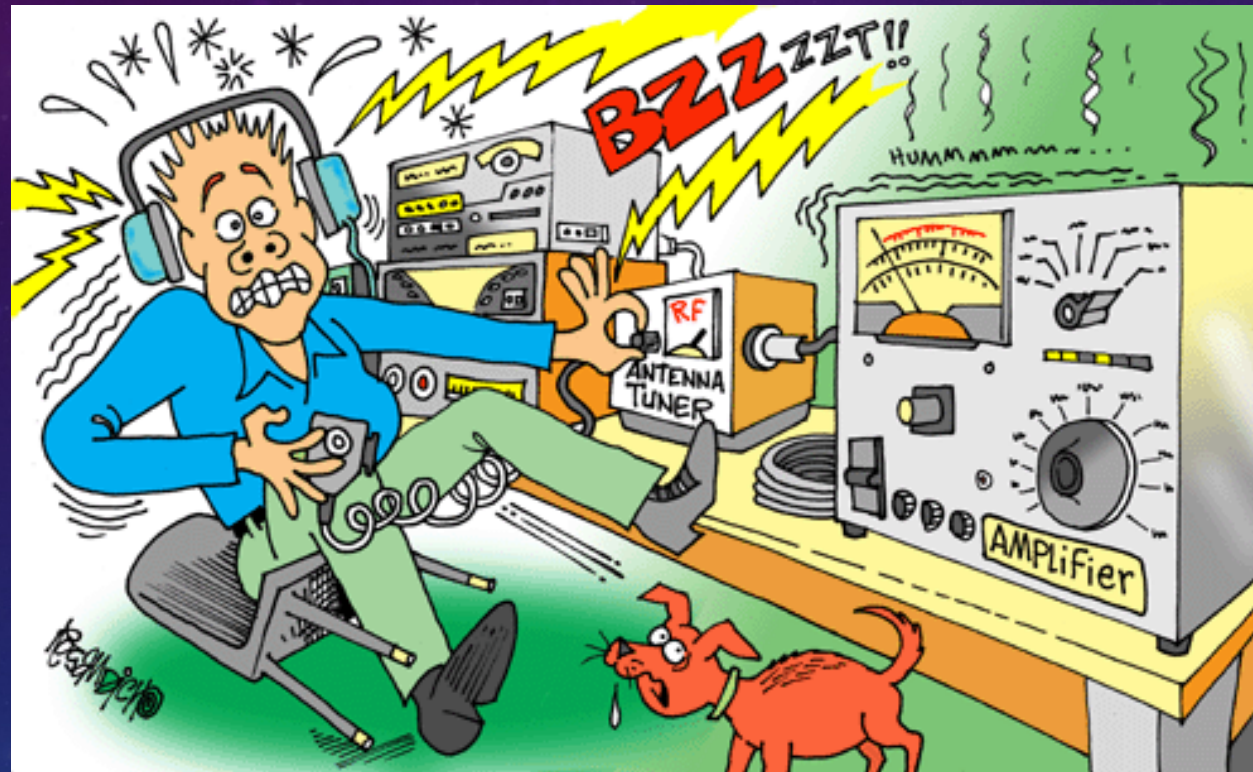
(updated 23rd Mar 2018)

www.informationisbeautiful.net

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SO CAN I EVER FEEL SAFE ON THE INTERNET AGAIN?



AS IN LIFE, THERE IS NO SUCH THING AS 100% PROTECTION. SO WHAT CAN I DO?

- Never give out personal information to anyone, even if it is the IRS calling you.
 - If someone calls you and then asks you to verify your information
 - On Social media sites
 - Hackers use for data mining
 - Unencrypted files and e-mails sent over the Internet – Always encrypt e-mails and files
 - On cloud storage sites
- Three things that are red flags this is a scam
 - Urgency, it has to be done today
 - The text is vague and not personal and there are English spelling and grammatical errors
 - They want you to click an embedded link or worse click a link to enter your username and password



WHAT ARE THE BEST PLACES TO STORE THIS INFORMATION?

- Simply put I would ask this: Can the executives of this company or this web site be put in jail or have to pay heavy fines due to federal regulation if they lose your information?
- If not, then what is their motivation for protecting your information?



PROTECTING YOUR COMPUTER

- Anti-Virus Software
 - Reputation based filters are only 36% effective as they can only protect you from known malware
 - McAfee, Symantec, Micro Trend, Sophos
 - Heuristic filters monitor for suspicious behavior and will protect from zero day infections
 - Looks like a duck, walks like a duck, quacks like a duck - Very expensive
- Host Intrusion Protection
 - Very expensive
- Firewalls
 - Buy a WIFI router with a firewall
 - Everyone should have a firewall
 - Virtual Private Networks (VPN)
 - Cisco OpenDNS (Free



PASSWORDS, PASSWORDS, PASSWORDS

- All passwords can be hacked, WHAT????? – Given enough time!
- The longer and more types of characters a password has the longer the time required to hack
 - Longer than 12 characters is best
 - At least 3 of the 4 types of characters
 - Uppercase (ABC), Lowercase (abc), number (123), symbol (\$@#)
- If you use a short or simple password, you will need to change it more often to keep it secure
- DO NOT USE: Family Names, pet names, birthdays or anything someone can guess about you
- Trivia: Most people use family names or worse 12345 or 11111 or just the word password



SAVE A MIND WITH PASSWORD SAFES

- What is great about password safes
 - They can store very complex passwords and generate random complex passwords
 - Allows use of a different password for each account your have
 - If one account has been compromised, then you only have to change one password
 - Can be easily backed up or duplicated – Do not back up to the cloud!!!!
- 1Password, Last Pass, Key Pass and lots of other



STOP GIVING EVERY USER ADMINISTRATOR ACCESS

- All users should only have guest access to your computer, including you!
- You should have a separate account that you can use to install applications and programs
 - This will stop malware from installing on your computer in the background
 - Only agree to log into the administrator account only if you intend to install an application
- This will also give you more control over who can install applications as well



VIRTUAL MACHINES AND WHY I LOVE THEM

- A virtual machine allows you to create a safe space on your computer
- Even if malware makes its way on to your computer, it won't infect your whole computer
- Kind of like a force field in the Star Trek movies
- Create a Windows or Mac or Linux environment
 - Ubuntu, not many malware written for Linux
 - Delete each session when finished
 - Parallels, VMWare or Open Source Virtual Box from Oracle
- Draw back is you need to be technically minded to set one up
- Sandbox software is even easier to set up.



ALL ABOUT INCREASING YOUR PROTECTION

- You start out as completely exposed but as you add each item starting with AV at 36% you can get yourself to the 90% range.
- What percentage do airlines try to operate at what level for safety?



IDENTITY MONITORING

- Everybody needs monitoring especially if you buy items on the Internet using credit cards and bank accounts.
- Lots of options and types of monitoring
- Lifelock, Insurance companies, others



QUESTIONS?

- First take a breath and know that you can still use the Internet in relative safety if you implement these suggestions.
- The good news is that you are nobody famous or a desirable target to go at directly. Have fun getting to know the digital side of Ham Radio!

