Keeping your Computer Secure

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Keeping your computer secure

- What are the threats we face
  - Every time we switch the computer on
  - Every time we open an email
  - Every time we access a web site
- What can we do about them
  - Technical measures
  - Account management
  - Password management

What are the threats we face

- Clever criminals want to gain access to your assets for their own ends:
  - Steal your identity
  - Steal your money
  - Use your computer for their own ends e.g.
    - To use your computer to crack security
    - To use your computer to mount an attack on other victims

Steal your identity

- Your identity is valuable
  - Personal details can be used to impersonate you
    - Security question responses can be harvested from hacked sites
    - Passwords can be retrieved from sites that do not treat security seriously
      - One vendor’s site recently echoed my user ID and password back to me by email as confirmation of my account creation! I had to change it immediately!

Steal your money

- Accounts can be created in your name
  - I have had credit cards fraudulently applied for (and in one case issued) in my name
- Bank account details can be captured by “key logging” software infiltrated into your computer
- Credit card details can be obtained from web sites and used to make fraudulent transactions
  - I have had one credit card used fraudulently
  - The reissued card was also use before I received it

Attackers can use your computer for their own ends

- If your computer gets compromised if can be used to attack other computers
  - Generate spam emails originating from YOUR computer
    - Can propagate viruses
  - Can participate in “denial of service” attacks on victim sites
    - Typically commanded remotely and could lie dormant for weeks
  - Etc.

Malware

- Malware
  - Malicious software installed on your computer
    - Designed to capture information as you use your computer
    - Scan your computer looking for “interesting” information
    - Lock out you from your computer
    - Ransom ware that encrypts your data and demands money to recover it
- Potentially unwanted programs (PUP)
  - Usually related to advertising

How does Malware get into your computer

- Exploiting security bugs in programs
  - Often reported and patched
  - Can be exploited through links in web sites or emails
- Tempting links inviting you to click but then installing unwanted software in Web sites, or emails, or in documents sent as attachments
  - You took the action (innocently/unintentionally) to allow it to happen

Don't Panic!

- The weakest link in the chain is YOU!
  - Be vigilant and think before you click
- You can see the target web page if you hover the mouse over the link
  - Does it bear any resemblance to what you would expect?
    - Learn to understand the format
    - Does it point to the domain that the email comes from
- **NEVER use an account with administrator privileges for anything other than deliberately installing software from known sources**

More on Accounts

- Most computers as delivered have only ONE account
  - This must be a highly privileged account to enable software to be installed
  - If you use this admin account for normal work however any dubious software that you unintentionally select can install on your computer
  - If you use a standard user account then Windows will prompt for the admin account password and without this password the software won't install – you remain SAFE
  - **Make sure you have a Standard Account and ALWAYS use it for normal work**

Other precautions – Anti Virus

- Anti Virus (Windows)
  - Must have Anti Virus installed
  - Keep it up to date!
  - Microsoft Defender is better than nothing
  - Avast! And AVG are free and good enough for most of us
  - Kaspersky (if you feel you need to pay) has a good reputation until recently
    - BUT – there are some hints that the Russians Security do have some control over the company. No longer allowed for USA government systems.

Anti Virus (2)

- Not too keep on the IBM Trusteer software as there are reports of problems with accessing other sites
- It is not recommended to use two AV products on the same computer
  - Microsoft Defender however cannot be removed but it shuts down if another AV product is installed
- Good idea to run a virus scan periodically
- A MalwareBytes scan is worth running from time to time.
  - In my opinion not worth paying for the non-free version

Passwords

- Many external sites require accounts to be created
  - The sites may not all handle your passwords safely
  - If/when a site is compromised your user name and password will be in the hands of the attacker and then in the dark web domain
  - Any other sites that use the same username/password pair will be accessible
    - The attacker will try known username/password pairs
- Conclusion
  - You should use different username/password pairs for EVERY such account to be safe
    - At least for accounts that matter

Passwords - 2

- Many accounts need passwords – how can you remember them
  - Passwords must be “strong” especially when credit cards are used
  - Hackers use “Rainbow Tables” to guess passwords very quickly
    - Simple character substitutions (e.g. l →1 o → 0) can be easily hacked as the hackers know all of these tricks
    - Rainbow tables contains millions of dictionary words
  - Passwords need to be long to defeat modern computer brute force attacks, around 20 characters are now needed for financial transactions

Passwords - 3

- Password creation
  - Must not be guessable
  - Must not be dictionary words
- Can use tricks like the first letters of a phrase with a mixture of upper and lower case characters
  - but this would be a limited character set and therefore needs a longer password
- Need to record them somewhere and for them to be easy to use

Passwords - Options

- Many accounts →
  - Many user IDs and Passwords
  - Passwords at least should be unique
  - Each password should not be easily derived from another
- Too many to remember – how do you record them?
  - Notebook or sheet of paper
    - What happens if you lose it or spill coffee on it?
    - Have you kept a copy?
    - Is the copy safe?
    - Is it up to date?
  - Spreadsheet or text document
    - What happens if your computer is stolen or compromised and hence your passwords are no longer private
    - Have you kept a secure backup?
  - There is another way → KeePass

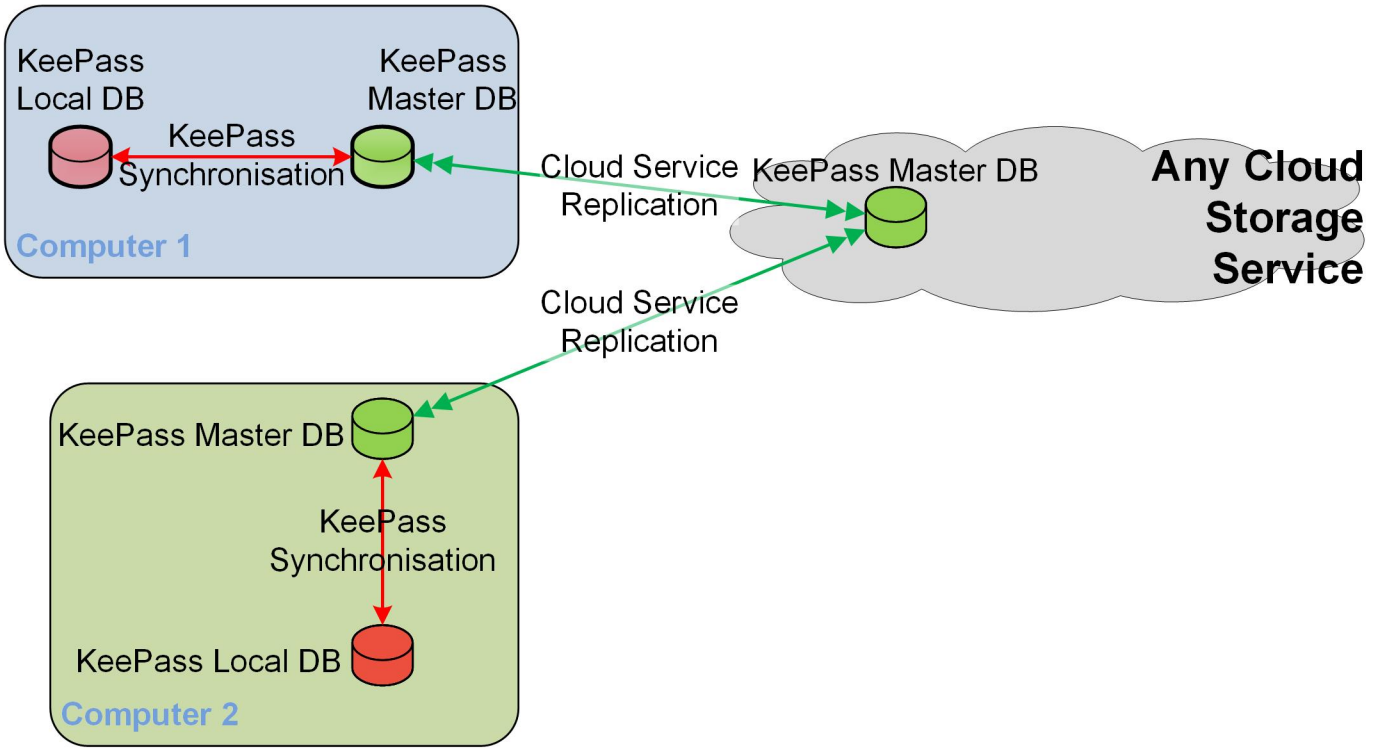
Passwords - KeePass

- KeePass solves most of these problems
  - Passwords are random and can be of any length
    - Generator can be configured to meet specific site length and character limitations (numbers, letters, special characters)
    - Makes it easy to have unique passwords on every site
    - But not easy to type!
      - Autotype solves this problem and makes it very easy to log onto most sites - even easier than typing simple passwords
  - Available for most platforms
    - Windows, iPhone, Android and (with some limitations) Mac and Linux
  - Database is encrypted and can be shared via a cloud service which also provides a backup

KeePass

- Features
  - Database is encrypted with one master key (password or a combination of password and key file)
    - Can safely be stored on a cloud server
  - Can easily be set up to autotype username and password into a web site using CTRL-ALT-A keys
    - Matches Web Page title or shows a list if there is more than one match
  - Database record can hold additional data
    - Such as security questions
    - Attachments (use with care keep them small)

KeePass replication



KeePass Syncronisation

- Synchronising between several computers
  - Local database opened by KeePass using the encryption key
    - Any records maybe updatein the local copy
  - Triggers synchronise this with a Master database that is shared via a cloud service e.g. TeamDrive
    - The synchronised cloud database copy is encrypted by KeePass using the encryption key
    - The cloud copy is replicated to all devices that share the cloud database
    - KeePass will replicate any changes to the cloud copy on each device into that computer's local database
      - The end result is for each local copy to contain identical records but does not ensure that the files are identical

Other things you should do

- Which the best defences you may still be compromised
  - Make sure you have a backup that is up to date
    - Should be off-line so that ransomware cannot access it
    - Some evidence that network attached devices are less vulnerable if accessed by a share name //server…. rather than via a drive letter
    - Cloud storage that contains versions cannot be compromised as you can go back to an earlier version
      - TeamDrive provides this feature, not all do

Summary

- Download from sites that you know about or that there are no adverse reports on the internet
  - Think before you click
- Use a reputable Antivirus product and keep it up to date
- Use different password on all sites (unless you don’t care that you password can be accessed)
- Always use a Standard User Account to access the Internet unless you are installing software from a trusted source