

HOW TO PROTECT YOURSELF FROM VIRUSES, WORMS, HACKERS, AND OTHER COMPUTER LOWLIFE

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Passwords

- The most important protection
- Often, the *only* protection

Strong Passwords

- Must be long, at least 14 characters
- Include many different characters:
 - Numbers, symbols, capital letters and lowercase letters
- Use random characters
- Avoid words, dates, names

Is Your Password Strong?

- Password strength tests:
 - www.grc.com/haystack.htm
 - www.PasswordMeter.com

Strong Passwords You Can Remember

- Pick a song lyric or sentence from a book
- Use the first letters of each word
- Include punctuation
- Example: 4Sa7ya,ofbfotc (“Four score and seven ...”)

Companies *Will* Be Hacked

- We can’t control that
- What does that mean?
- Different passwords for each account

Password Manager Software

- Remembers passwords for you
- Creates complex passwords
- Enters passwords automatically
- Examples:
 - LastPass
 - 1Password
 - Dashlane

Biometric Authentication

- Reads:
 - Fingerprint
 - Patterns in eye
 - Voice authentication

- Face pattern
- Convenient but secure
- Need password as backup

2-Factor Authentication

- Proving that you are really you
- Requires Two Things:
 - Something you know: Password
 - Something you have: Phone

Which Accounts Need Strong Passwords

- Banking / Finance
- Retailers
- Email (can be a backdoor to other accounts)

Phishing

- Fake Email or Web sites
- Tricks Internet users to reveal:
 - Credit card, Social Security numbers, etc.

Phishing by Phone

- Tries to get information
- Or access to your computer

Spear Phishing

- Targeted email
 - Contains confidential customer details
- Can easily trick people to reveal:
 - Credit cards, Social Security numbers, etc.

What to Do?

- Suspect *ANY* inbound message
 - Email
 - Pop-up
 - Phone call

Malware

- “Malicious Software”
- Viruses, Worms, Trojan Horses, etc.

Types of Malware

- Viruses
- Worms
- Trojan Horses

- Ransomware
- Spyware

Computer Viruses

- A program attached to a data file
- Spread when files are exchanged
 - Email
 - Downloaded songs and videos
 - USB Flash Drives
- Requires user action to come alive
- Usually arrive as attachments
 - May be disguised as Web hyperlinks
- Usually come from *friends*
 - Via your friend’s Address Book

Worms

- Spread by themselves
- Through networks
- Without human interaction

Trojan Horses

- Appears to be useful
 - E.g., Removes viruses
- But does something bad

What Does Malware Do

- Main purpose
 - Replicate themselves
 - Spread to other computers
- Secondary objectives
 - Slow down networks
 - Display annoying messages
 - Gain control of computers
 - Destroy files

Which Is a Sign of an Infected PC?

- Odd messages or pop-ups appear
- Program icons suddenly are gone
- Browser takes you to strange places
- Computer is unusually slow
- Computer fan is very loud
- Antivirus programs stop working

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Ransomware

- The worst type of malware
- Encrypts your documents, pictures
- You have to pay ransom to decrypt
- E.g., “CryptoLocker”

The Best Way to Get Infected?

- Download free songs or videos
- Open strange email attachments
- Download free programs
- Share a USB Flash drive
- Go to porn sites
- All of the above

Privacy & WiFi

Email is **NEVER** Private

- If the Director of the CIA does not have private email....
- Then how can we expect it

How Many Employers Spy on Their Employees?

- 73% spy on their employees’ email
- Survey by: The American Management Association

Spyware

- Transmits information about you
- Keylogger
 - Records keystrokes:
 - Passwords, Login IDs, Credit cards

Who Uses Spyware?

- Bosses
- Hackers
- Parents & Spouses

WiFi

- Wireless network in homes and companies
- Very convenient
- Not very secure
- Can be eavesdropped

Wireless Eavesdropping

- Beware public places (Starbucks)
- Someone can “sniff” your connection
- Use https
- Use a VPN

The Internet of Things (IOT)

- Growing number of devices
- Minimal security
- Can spy on us
- Baby monitors have little security

Laptop Webcams

- Can take pictures of you without your knowledge
- Put some tape over the camera when not in use

Protection

- Antivirus Software for sale
 - Norton
 - McAfee
 - Kaspersky
- Free programs
 - AVG
 - Avast
 - Microsoft Windows Defender

Microsoft Windows 10

- Windows Defender
- Finally a good antivirus app
- Antivirus could reduce security

How Antivirus Software Works

- Looks for virus signatures
- Prevention
 - Scans incoming email
- Cures
 - Scans whole PC periodically
- **Quarantines** possible malware
 - Moves virus to secure area on HD

“Zero Day” Virus

- Brand new virus
- 82,000 new viruses every day, worldwide
- Antivirus s/w can’t spot it

Update Your Antivirus S/W

- New viruses arrive every day
- Antivirus cannot protect you if...
 - It does not know about new viruses
- Be sure software updates *automatically*

Malwarebytes Free

- “Virus first aid”
- Quickly scans your PC
- Finds and removes malware
- Free, from malwarebytes.org

If Your PC Is Infected ...

- Scan with your Antivirus Program
- Scan with Malwarebytes
- Worst case:
 - Reinstall your operating system and programs and backed-up data

Update All Programs

- No program is perfect
 - Can have vulnerabilities
- Programmers come up with patches
- Be sure all programs are up to date
 - Automatically

Go to the Source

- Update **only** at publisher’s site:
 - microsoft.com
 - adobe.com
 - java.com
 - etc.

Firewalls

- Program or Device
- Protects computers from outside threats
 - E.g., hackers and worms

Where to Get a Firewall

- Windows and OS X include firewalls
- Security suites also include firewalls
 - E.g., Norton Internet Security
- Can also buy hardware firewalls
- Home Internet routers are firewalls

Is Your Firewall Working?

- Websites that test a PC’s vulnerability
 - Gibson Research Corp. (www.grc.com)
 - ShieldsUP
 - LeakTest

Don’t Give Yourself Too Much Power

- Two Types of User Accounts
- Administrator
- Standard User
- Only Administrator can install software

HOW TO PROTECT YOURSELF FROM VIRUSES, WORMS, ETC.

Set up Two Accounts on Your PC

- An Administrator account
 - Use only when installing software
- A Standard User account
 - Use this at all other times
- Then...
- If a virus attacks your PC
- It cannot install itself!

How to Create a Standard User Account:

- Create a new Administrator account
 - Call it: SysAdmin or similar
- Switch to the Admin account
- Downgrade your original account
 - To “User” or “Standard User”
- Switch back to Standard account

WiFi: Use a VPN

- VPN: Virtual Private Network
- Encrypts data point to point

What Is a Data Backup?

- Copies of your files
- Can be used to replace the originals
 - If the originals are lost

Which Files Should I Backup?

- Data files
 - Files you’ve created or purchased
- Program files (less important)

Two Ways to Backup Files

- **Incremental Backup** (partial backup)
 - Only files that have changed
- **Image Backup** (system backup)
 - Makes an exact copy of the whole drive

Where to Back Up Your Data

- External hard drives
 - Connected directly to your PC
- Network-attached storage (NAS)

- Hard drive on your home network
- Online (in the “cloud”)

How Often Should You Backup?

- As often as possible
- Must be Automatic

Backup Rule: 3 – 2 – 1

- At least **3** copies of your data
- Using **2** different methods
- At least **1** copy offsite

Backup Software

- PC
 - Assortment of programs
- Mac
 - Time Machine
 - Super Duper
 - Carbon Copy Cloner

Check Your Backups

- Try to restore a random file
- At least twice a year
 - When you change your clocks

Simple Solutions

Typewriters

- Used by the Kremlin in Moscow

Are Tablets Immune?

- Mostly, yes
- Protected ecosystems
 - Apple’s App Store
- But, hackers may soon invade

Chromebooks

- Inexpensive
- Well protected
- Easy to reset

Are Macs Immune?

- A few attacks so far
- Cross-platform apps vulnerable
 - Java, Adobe Reader & Flash
- But many more viruses will come

But, You Still Need:

- Good passwords
- Be wary of Phishing attempts
- Data backup

Summary

- Careless design has made our PCs vulnerable
- “Convenient” is the opposite of “Secure”
- We can access the world — and the world can access us
- An arms race: Hackers only get smarter
- We have to be wary always

Checklists

Checklist: Data Backups

- External hard disk installed
- Do complete image backup
- Set up incremental backup S/W
- Set up cloud backup of most important files
- Check backups twice a year

Checklist: Antivirus Software

- Antivirus S/W installed
- Antivirus subscription active
- Automatic updates enabled
- Set to scan PC on regular basis

Checklist: Firewall

- Firewall installed and active
- Your router set to work as firewall
- Firewall tested at grc.com site

Checklist: Software Updates

- OS set to update automatically
- Other S/W set to update also
- Your Web browser is latest version

Checklist: Deterring Hackers

- Passwords are long and random
- Using a password manager
- Phishing filter enabled in browser
- Use a “Standard User” account