Cybersecurity for Regular Folk

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Outline

- Threats
- Physical Security
- Email
- Updates/Patches
- Social Media
- Mobile
- Website security
- Data Security /PCI
- Cloud / IoT
- Q&A

Some Eye Opening Statistics

- 2014 has been called the "Year of the Data Breach" and 2015 had 2 less KNOWN breaches than 2014. 2016 is off to a bad start…
- A Champlain college study found:
  - 50% of breaches targeted businesses with < 1000 employees
  - 31% of cyberattacks targeted businesses with < 250 employees
  - 55% of businesses with $10 million or less in revenue reported at least one breach in the 2013. More than 50% of these businesses reported multiple breaches
  - 92% of businesses that were breached lost Personally Identifiable Information (PII) such as credit cards or social security numbers

Some Eye Opening Statistics

- **Last year, 594 million people worldwide were victims of online crime. Cybercrime affects millions every year, yet consumers still do not take action to protect themselves**
- **Let’s see more:**
- https://us.norton.com/norton-cybersecurity-insights-report-global

For your consideration…

- "There are two kinds of big companies in the United States. There are those who've been hacked … and those who don't know they've been hacked." – James Comey, FBI Director
- "Techniques, tools, and approaches used to access company networks to commit cybercrime are now available much more widely available along with advice on how to use them." - Andy Archibald
- For example…

Who cares about my device?

- Any device connected to a network is subject to attack
- There are thousands of worms and viruses that continuously attack indiscriminately
- Hackers may attempt to use your device(s) as zombie or as a stepping stone to launch attacks against other devices
- Hackers and identity thieves want to steal your information and/or money

Threats

- Identity theft
- Hacking
- Phishing
- Viruses / Malware
- Fraud / Financial theft
- Impersonation
- Information theft
- Reputation damage

Guiding Principals of Security

- Always maintain a healthy dose of skepticism/paranoia!
- Doubt everything & proceed with caution
- If you’re not paying with money, you’re paying with data
- Threats emerge and evolve constantly
- Education and awareness is critical

https://nihseniorhealth.gov/toolkit/toolkitfiles/pdf/Glossary.pdf

“Just because I’m paranoid, doesn’t mean they’re not out to get me” – Unknown

Physical Security

- All security starts with physical security
- Control physical access to systems
- Authentication is critical
  - 3 types: password, token, biometrics
  - “What you have, what you know, what you are”
  - Multi-factor authentication
  - Protect credentials as if they are money!
- Password Types:
  - BIOS Passwords
  - OS Passwords
  - Application Passwords

Physical Security

- Lock down systems as much as practical
- Avoid weak passwords:
  - Less than 8 characters
  - Name of family, pets, friends, celebrities, etc.
  - Easily acquirable information such as phone #
  - Common word(s) found in a dictionary
  - Strong password example: 1L0v33mp0e3rU!
- Use a strong, unique password for each site/application/device
- Change passwords regularly
- Password manager app?

http://www.pcmag.com/article2/0,2817,2407168,00.asp

Physical Security

- Biometrics
  - Fingerprint
  - Facial recognition
  - Retinal scan
  - Voice recognition
- Social Engineering
  - Attempt to dupe you into providing info that allows a hacker to access your system(s)
  - Many variants:
    - Phone
    - E-Mail (Phishing)
    - Messaging
    - Social media

Backup

- You should backup data regularly!
- Numerous methods
  - External drive
  - Flash memory
  - Tape
  - CD / DVD
  - Cloud
- Store off-site or in secure location on-site
- Consider long-term privacy ramifications

Sanitization

- Data is not physically removed from a disk when deleted
- Common disk utilities such as FDISK and FORMAT will not permanently destroy data
- Tools can retrieve “deleted” data
- “Information leakage” can happen in non-obvious ways. Copiers for example…

Sanitization

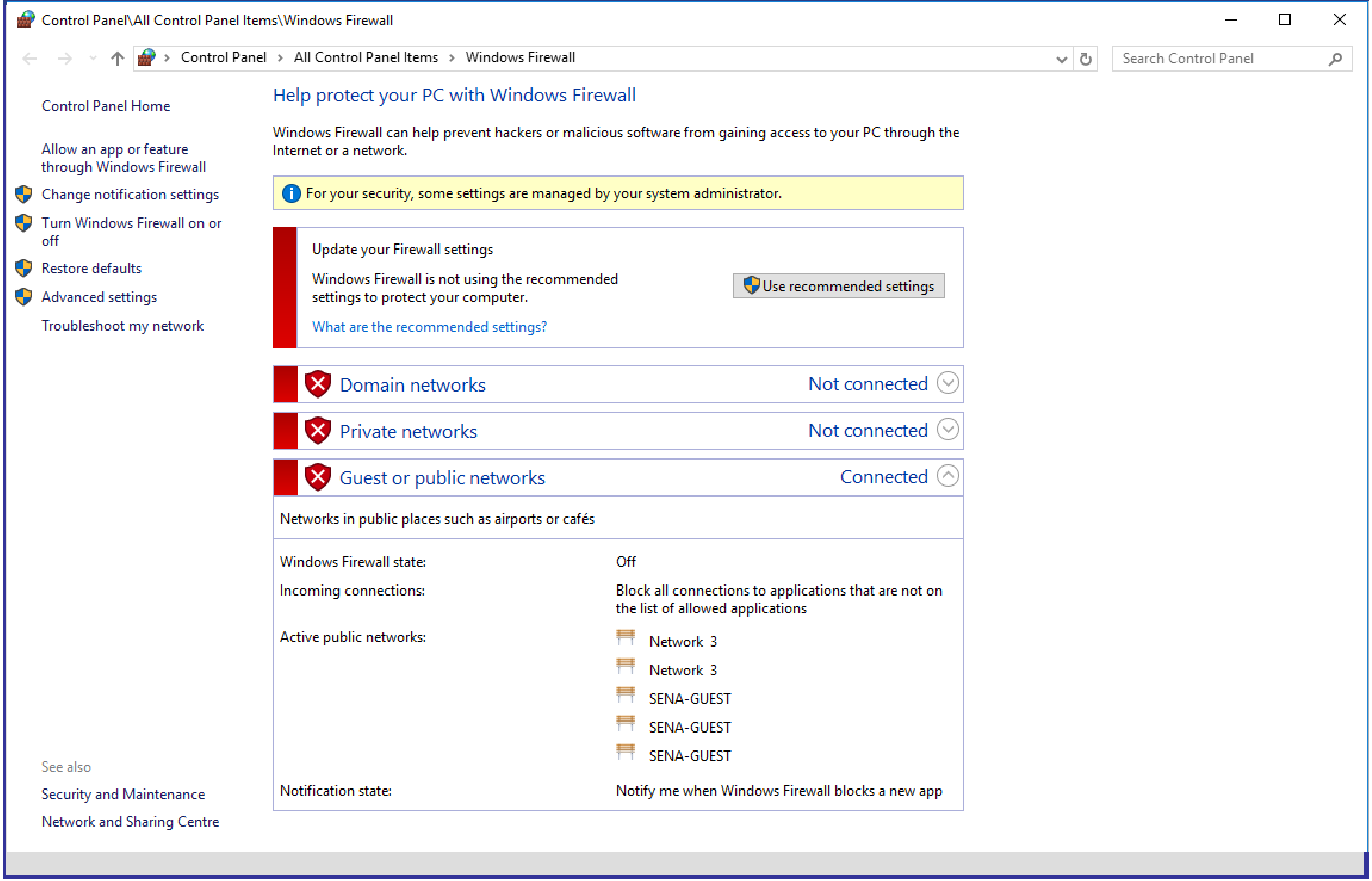
- There are essentially 4 ways to permanently destroy data:
  - Physically destroy disk/device
  - Degauss disk with a strong magnet
  - Encrypt data and destroy key
  - Use a disk sanitization tool
    - Norton System Works (www.symantec.com)
    - AutoClave (staff.washington.edu/jdlarios/autoclave)

Firewalls

- Hardware
  - Router
  - Dedicated
- Software
  - Monitor network activity
  - Block ports
  - Notification when your PC attempts Internet access or attempt is made to connect from the Internet
  - Block inbound & outbound access based on rules
  - Scan ports - scan.sygate.com/probe.html

http://www.pcmag.com/article2/0,2817,2369749,00.asp

Firewalls



Control Panel\All Control Panel Items\Windows Firewall

Control Panel › All Control Panel Items › Windows Firewall

Search Control Panel

Control Panel Home

Allow an app or feature through Windows Firewall

Change notification settings

Turn Windows Firewall on or off

Restore defaults

Advanced settings

Troubleshoot my network

See also

Security and Maintenance

Network and Sharing Centre

Help protect your PC with Windows Firewall

Windows Firewall can help prevent hackers or malicious software from gaining access to your PC through the Internet or a network.

For your security, some settings are managed by your system administrator.

Update your Firewall settings

Windows Firewall is not using the recommended settings to protect your computer.

Use recommended settings

What are the recommended settings?

Domain networks — Not connected

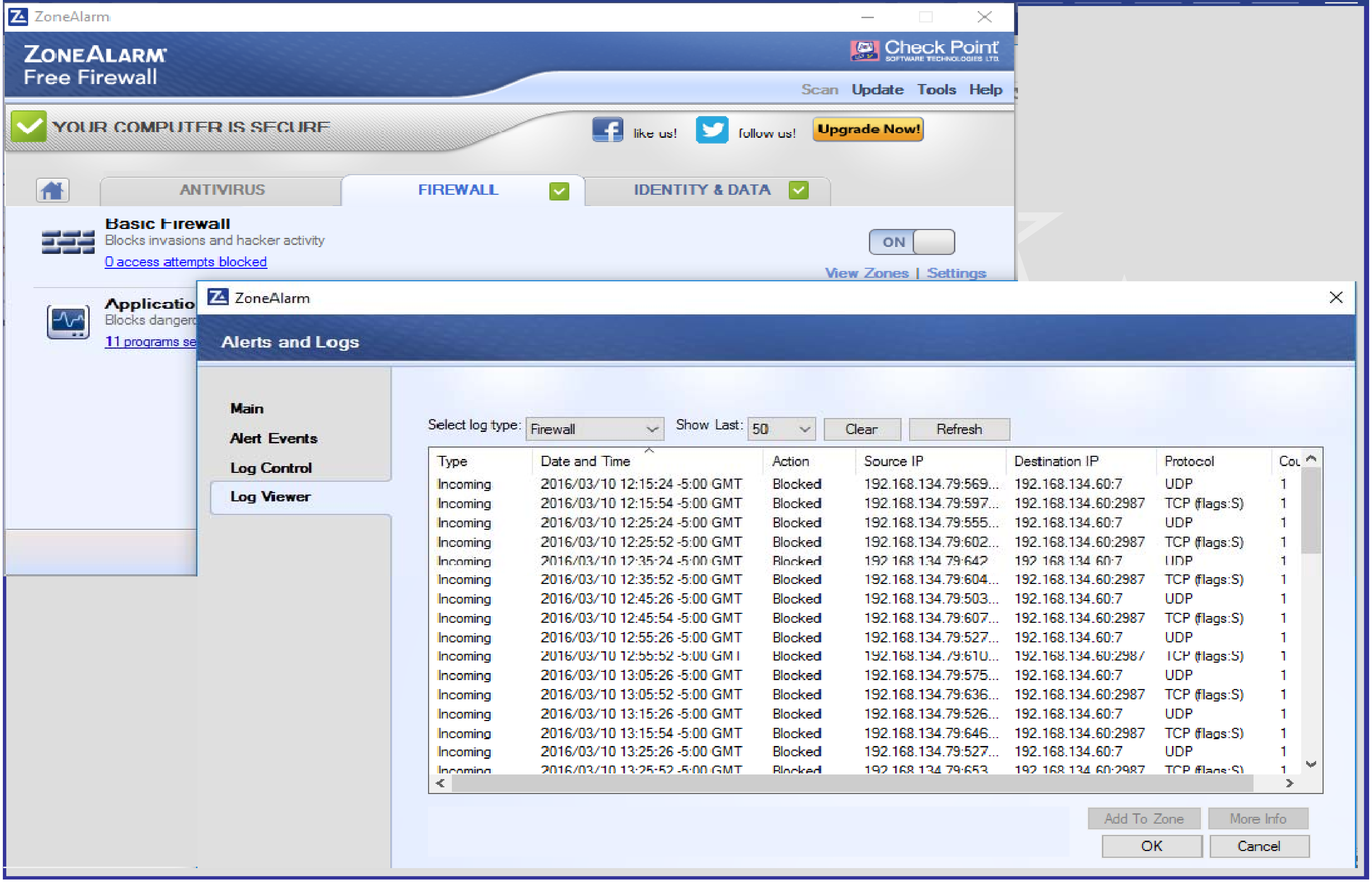
Private networks — Not connected

Guest or public networks — Connected

Networks in public places such as airports or cafés

Windows Firewall state:	Off
Incoming connections:	Block all connections to applications that are not on the list of allowed applications
Active public networks:	Network 3 Network 3 SENA-GUEST SENA-GUEST SENA-GUEST
Notification state:	Notify me when Windows Firewall blocks a new app

Firewalls



YOUR COMPUTER IS SECURE

Basic Firewall
Blocks invasions and hacker activity
0 access attempts blocked

Applicatio
Blocks danger
11 programs se

Select log type: Firewall

Show Last: 50

Type	Date and Time	Action	Source IP	Destination IP	Protocol	Cou
Incoming	2016/03/10 12:15:24 -5:00 GMT	Blocked	192.168.134.79:569...	192.168.134.60:7	UDP	1
Incoming	2016/03/10 12:15:54 -5:00 GMT	Blocked	192.168.134.79:597...	192.168.134.60:2987	TCP (flags:S)	1
Incoming	2016/03/10 12:25:24 -5:00 GMT	Blocked	192.168.134.79:555...	192.168.134.60:7	UDP	1
Incoming	2016/03/10 12:25:52 -5:00 GMT	Blocked	192.168.134.79:602...	192.168.134.60:2987	TCP (flags:S)	1
Incoming	2016/03/10 12:35:24 -5:00 GMT	Blocked	192.168.134.79:642	192.168.134.60:7	UDP	1
Incoming	2016/03/10 12:35:52 -5:00 GMT	Blocked	192.168.134.79:604...	192.168.134.60:2987	TCP (flags:S)	1
Incoming	2016/03/10 12:45:26 -5:00 GMT	Blocked	192.168.134.79:503...	192.168.134.60:7	UDP	1
Incoming	2016/03/10 12:45:54 -5:00 GMT	Blocked	192.168.134.79:607...	192.168.134.60:2987	TCP (flags:S)	1
Incoming	2016/03/10 12:55:26 -5:00 GMT	Blocked	192.168.134.79:527...	192.168.134.60:7	UDP	1
Incoming	2016/03/10 12:55:52 -5:00 GMT	Blocked	192.168.134.79:610...	192.168.134.60:2987	TCP (flags:S)	1
Incoming	2016/03/10 13:05:26 -5:00 GMT	Blocked	192.168.134.79:575...	192.168.134.60:7	UDP	1
Incoming	2016/03/10 13:05:52 -5:00 GMT	Blocked	192.168.134.79:636...	192.168.134.60:2987	TCP (flags:S)	1
Incoming	2016/03/10 13:15:26 -5:00 GMT	Blocked	192.168.134.79:526...	192.168.134.60:7	UDP	1
Incoming	2016/03/10 13:15:54 -5:00 GMT	Blocked	192.168.134.79:646...	192.168.134.60:2987	TCP (flags:S)	1
Incoming	2016/03/10 13:25:26 -5:00 GMT	Blocked	192.168.134.79:527...	192.168.134.60:7	UDP	1
Incoming	2016/03/10 13:25:52 -5:00 GMT	Blocked	192.168.134.79:653	192.168.134.60:2987	TCP (flags:S)	1

Wi-Fi Security

- Wireless networks are vulnerable
  - Change default password
  - Keep firmware on equipment updated
  - Name network something difficult to guess
  - Don’t broadcast SSID
  - Use Encryption (no open networks):
    - Wired Equivalent Privacy (WEP)
    - Wi-Fi Protected Access (WPA) – better
    - Wi-Fi Protected Access 2 (WPA2-PSK) – best
      - Devices made after 2006 with a “Wi-Fi” logo must support WPA2 encryption

Wi-Fi Security

- Wireless networks are vulnerable
  - Only allow known MAC addresses
  - Disable DHCP and use static IP’s
  - Don’t use default subnet
  - Whitelist devices
  - Create a guest network that is constrained
  - Check access logs occasionally for unknown devices

Encryption

- Scrambles data
- Uses complex algorithms to create virtually unbreakable keys
- Data can only be accessed with proper key
- Depending on bit-strength, can be very secure
  - 40-bit is low end, has been broken
  - 256-bit is common now
  - 1024-bit is high-end, virtually unbreakable

Encryption

- Can cause permanent data loss
- Can be cumbersome to distribute and use keys
- Backdoors in products may render encryption moot

Encryption

- Secure Sockets Layer (SSL)
  - Web-based
  - Protocol specifier: https://
  - Look for a lock in browser
- PGP
  - Phil’s Pretty Good Privacy
  - E-mail
- Windows supports encryption
- Database encryption

Client Data

- Restrict employee access on a need to know basis
- Audit access to customer information
- Sanitize! Ensure that PII is wiped
- Install regular patches on all components
- The power of Big Data and the Internet of Things (IoT) means ever more data will be collected

Client Data

- Lots of recent high profile attacks
- Personally Identifiable Information (PII)
- More data is collected than ever before
  - Don’t store highly sensitive information if you don’t have to!
  - Password protect customer information
  - Encrypt customer information
  - Keep sensitive customer information disconnected from the Internet
  - Don’t allow employees to put sensitive information on mobile devices

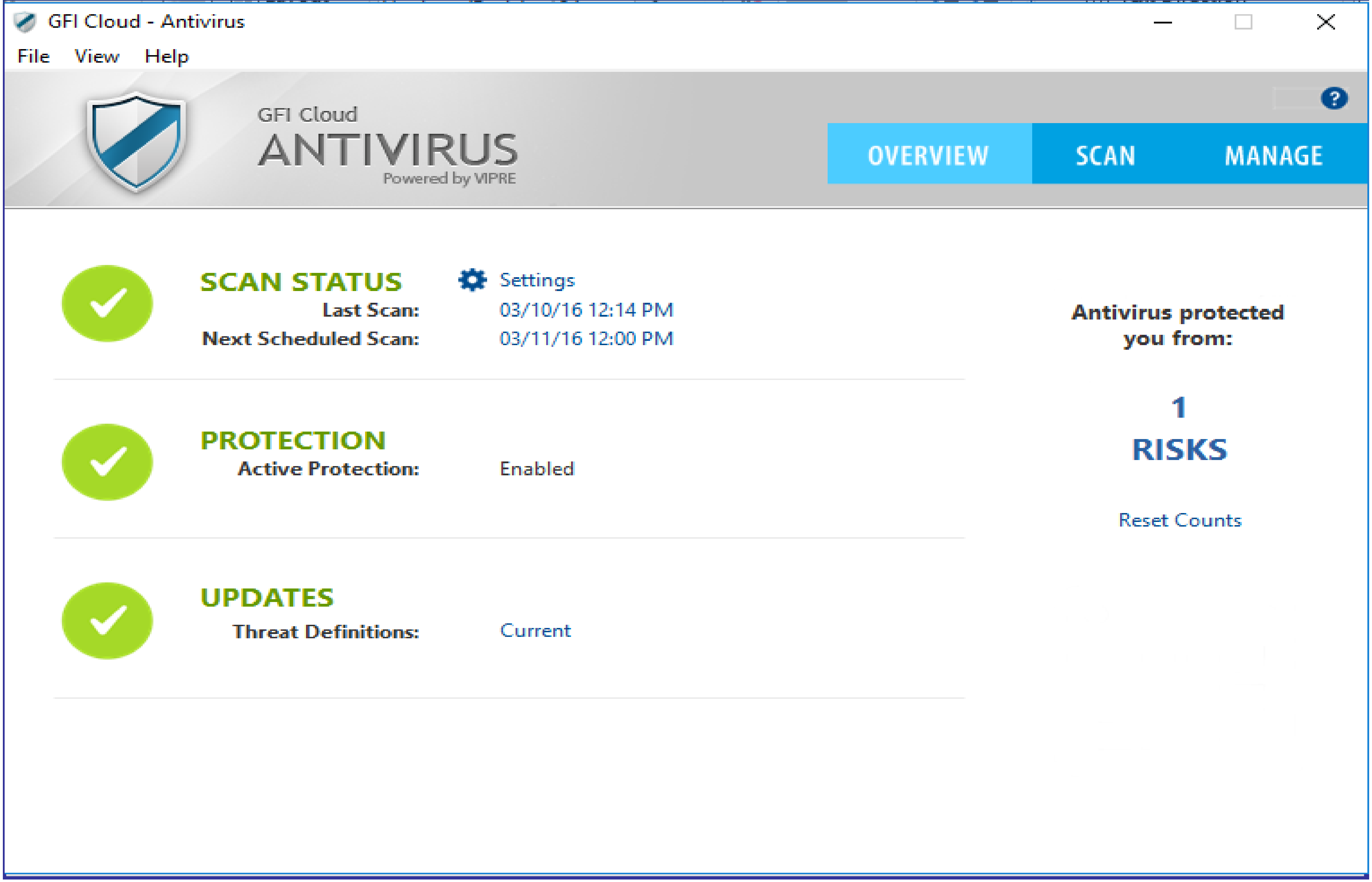
Malware

- Many types:
  - Virus
  - Worm
  - Trojan horse
  - Spyware
  - Adware
  - Bot
  - Zombie
  - Ransomware
  - Rootkit

Malware

- Use anti-malware software such as:
  - McAfee VirusScan
  - Norton AntiVirus
  - Grisoft AVG
  - Trend-Micro PC-cillin
  - Panda Antivirus
  - Windows Defender
  - http://www.pcmag.com/article2/0,2817,2372364,00.asp

GFI Antivirus



SCAN STATUS Settings

Last Scan: 03/10/16 12:14 PM

Next Scheduled Scan: 03/11/16 12:00 PM

PROTECTION

Active Protection: Enabled

UPDATES

Threat Definitions: Current

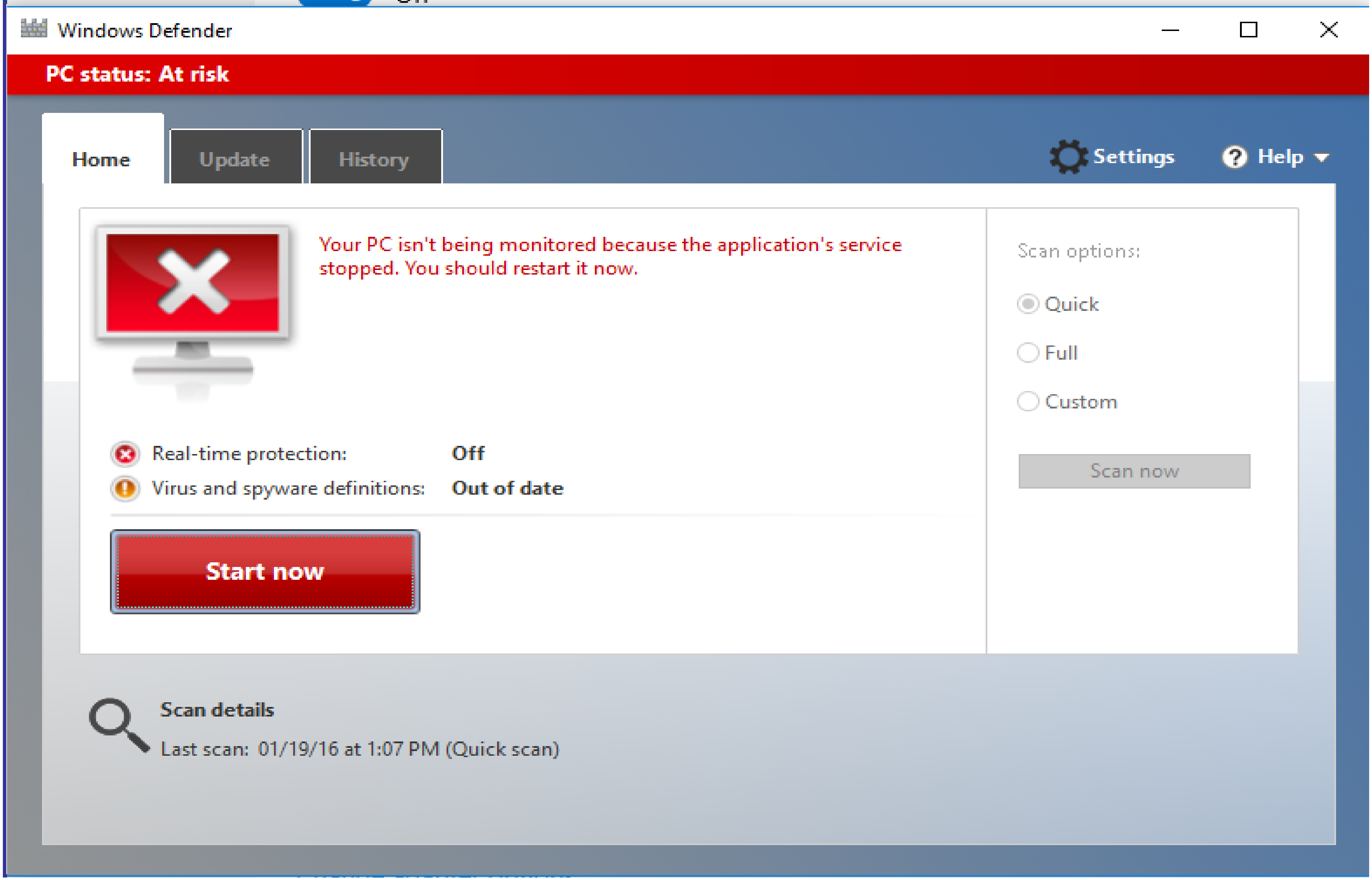
Antivirus protected you from:

1

RISKS

Reset Counts

Malware



PC status: At risk

Your PC isn't being monitored because the application's service stopped. You should restart it now.

Real-time protection: **Off**

Virus and spyware definitions: **Out of date**

Scan options:

● Quick

○ Full

○ Custom

Scan details

Last scan: 01/19/16 at 1:07 PM (Quick scan)

Malware

- Beware of file attachments
- Be wary of links
- Stay informed about new viruses and hoaxes
  - Symantec Security Response: www.symantec.com/avcenter
  - US-CERT: www.us-cert.gov/

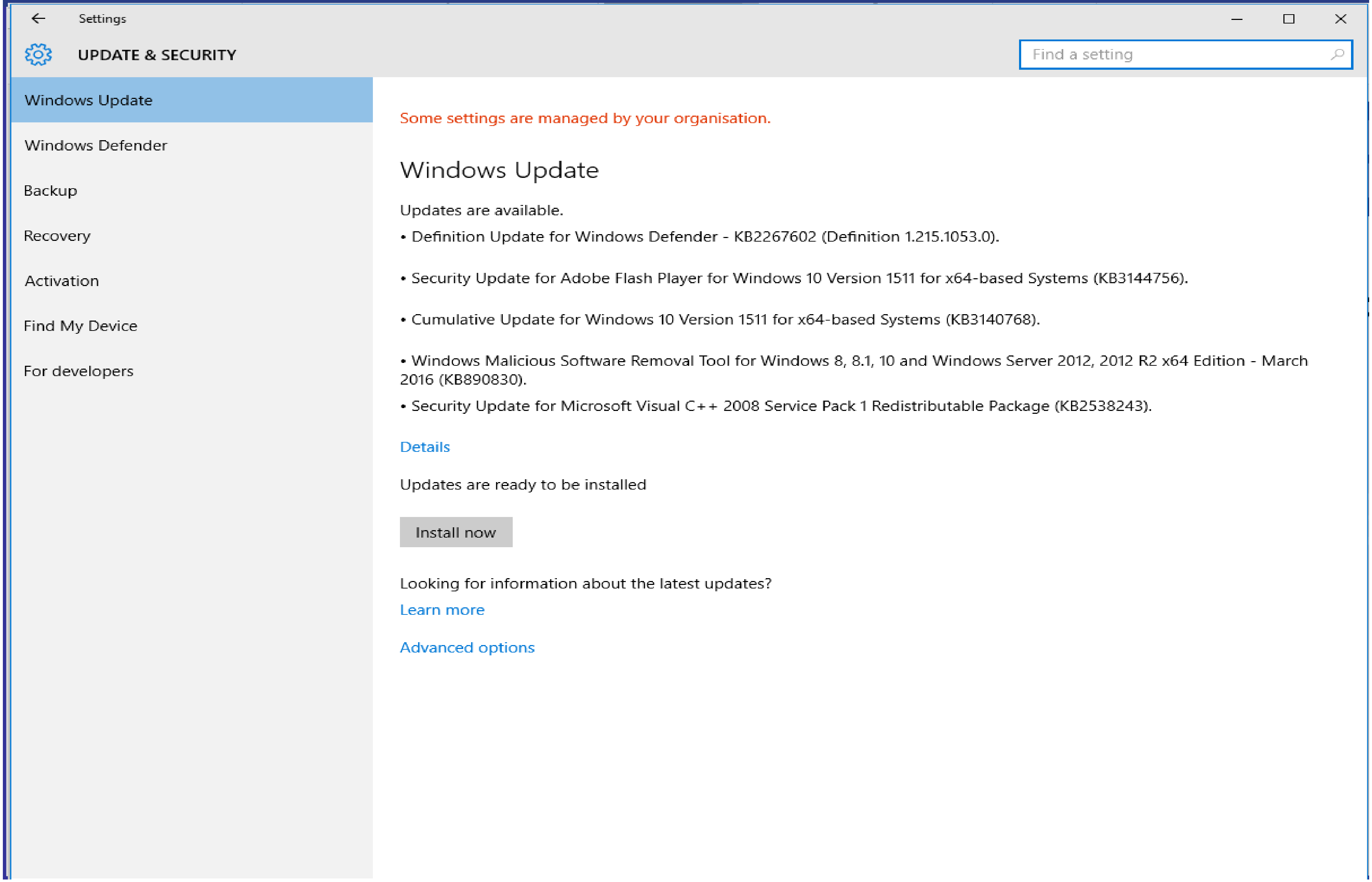
Malware

- Anti-malware software usage:
  - At least weekly
  - Use auto-update
- Ensure that a full/deep scan is done weekly
- Ensure that all drives are scanned
- Ensure the your software is scanning for memory resident malware
- Consider anti-malware software for your mobile devices

Patches / Updates

- Firmware, operating system and application software undergo constant revisions and improvements
- Flaws in these complex applications provide hacking opportunities. Eg. Heartbleed
- Vendors provide “patches” also known as updates that fix issues
- You must regularly install updates
- Signup for security e-mails regarding flaws and patches or follow vendors on Facebook / Twitter

Patches / Updates



Some settings are managed by your organisation.

Windows Update

Updates are available.

• Definition Update for Windows Defender - KB2267602 (Definition 1.215.1053.0).

• Security Update for Adobe Flash Player for Windows 10 Version 1511 for x64-based Systems (KB3144756).

• Cumulative Update for Windows 10 Version 1511 for x64-based Systems (KB3140768).

• Windows Malicious Software Removal Tool for Windows 8, 8.1, 10 and Windows Server 2012, 2012 R2 x64 Edition - March 2016 (KB890830).

• Security Update for Microsoft Visual C++ 2008 Service Pack 1 Redistributable Package (KB2538243).

Details

Updates are ready to be installed

Looking for information about the latest updates?

Learn more

Advanced options

E-mail Security

- Many Problems with e-mail
  - Not originally designed with security in mind
  - Malicious payloads
  - Threat of information leakage
    - Printing
    - Forwarding
  - Violation of privacy
  - Spoofing
  - Phishing / Spear Phishing

E-mail Security

- Spam
  - Don’t reply to “get off list”, just delete it unless from a legitimate source
  - Don’t forward mail with list of recipients showing
  - Use Bcc feature for group mailing
  - Don’t post your e-mail address on Web
  - Use a bogus address / change addresses frequently
  - Set e-mail security settings to high (Security tab in Options)
  - Use a Spam filter like SpamKiller

E-mail Security

- Phishing
  - Type of Social engineering attack
  - Much worse than spam
  - Use e-mail to acquire personal information
  - Use spoofed e-mail addresses
  - Emails appear be from a legitimate source
  - Never give out user name and/or password
  - Check link targets before following link in email

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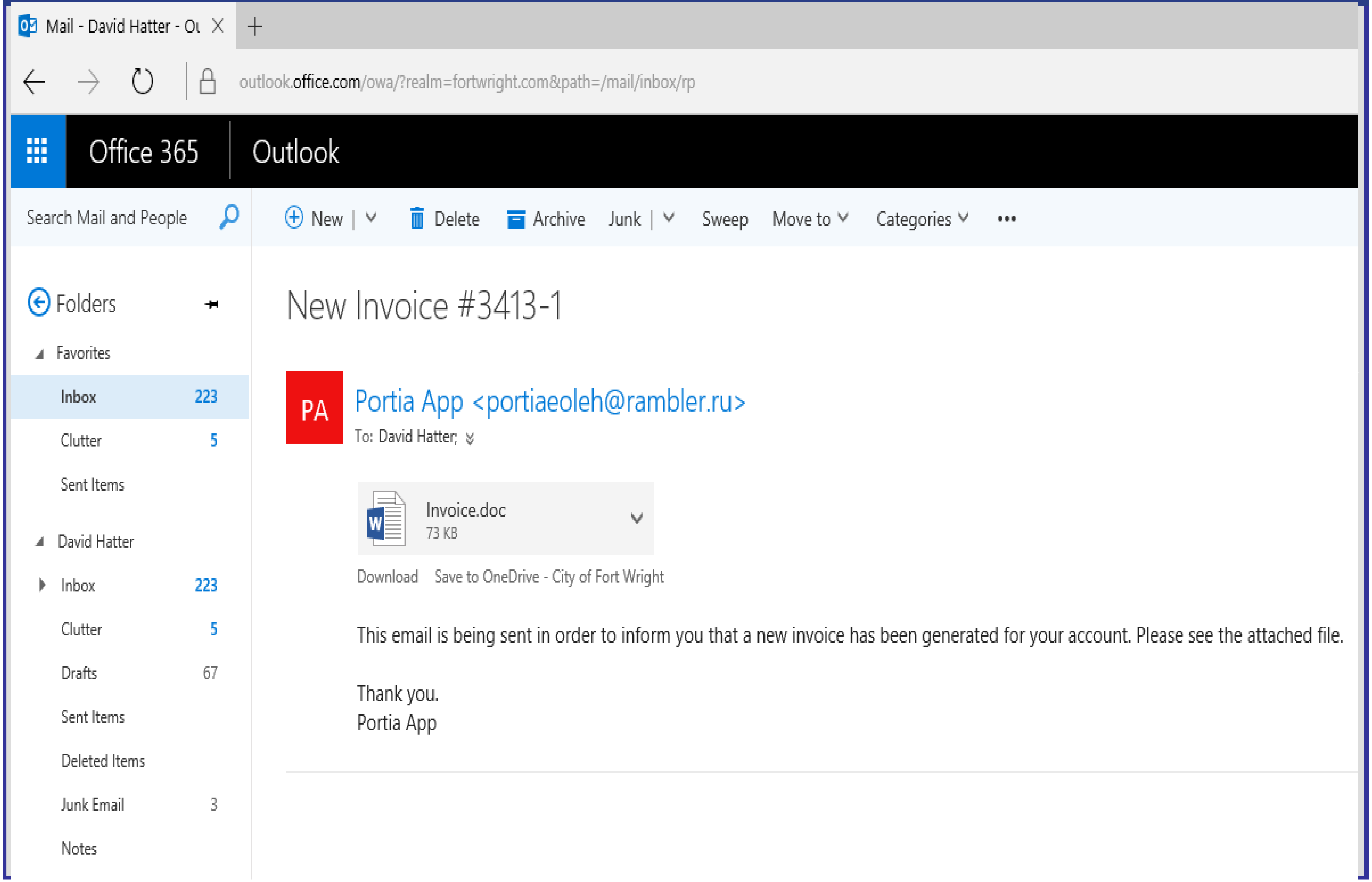
  - Never give out user name and/or password
  - Check link targets before following link in email
  - Spear Phishing: similar, but after money…

Phishing Example



New Invoice #3413-1

Portia App <portiaeoleh@rambler.ru>

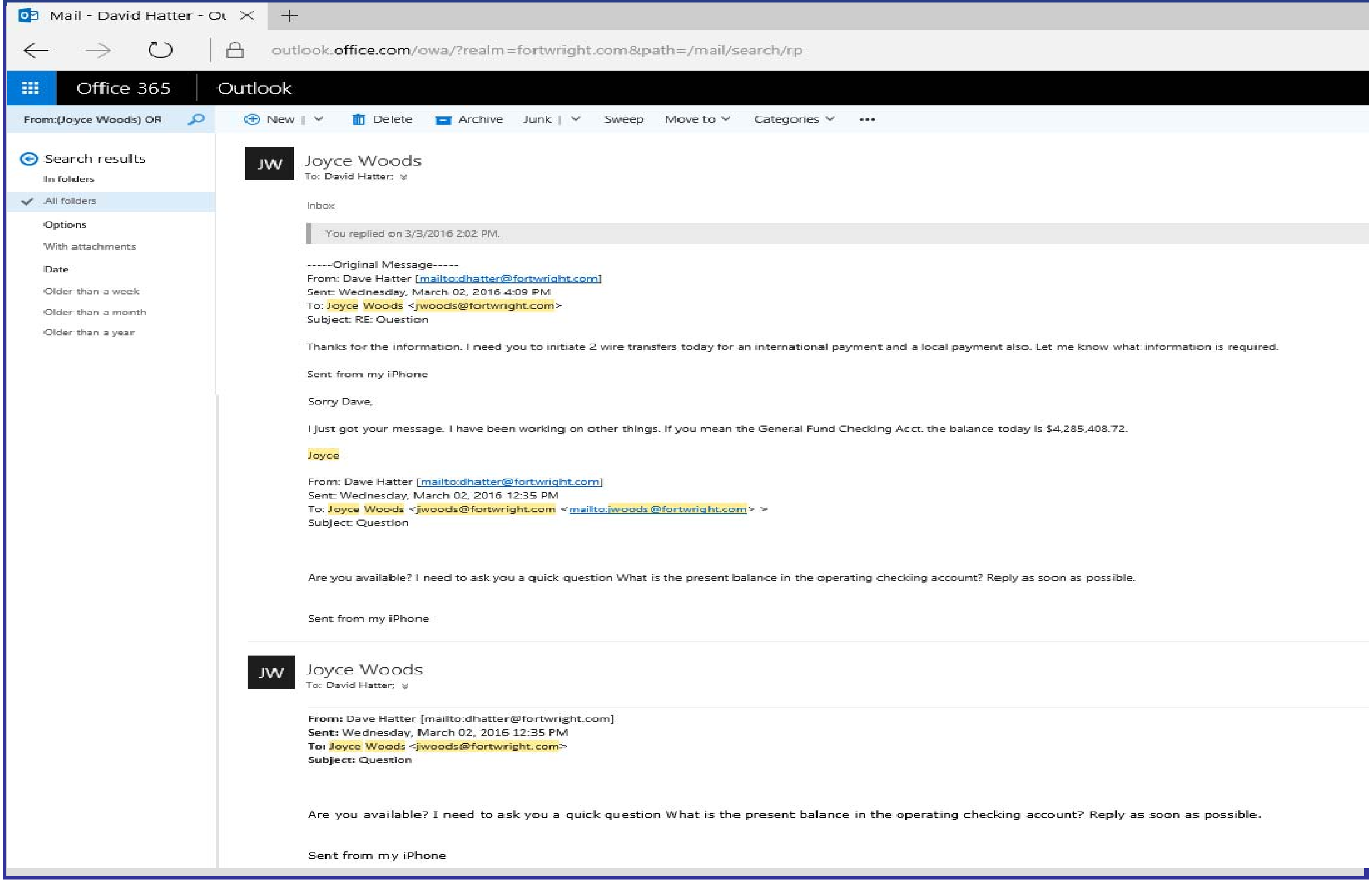
To: David Hatter;

Invoice.doc
73 KB

This email is being sent in order to inform you that a new invoice has been generated for your account. Please see the attached file.

Thank you.
Portia App

Spear Phishing Example



Joyce Woods
To: David Hatter;

Inbox

You replied on 3/3/2016 2:02 PM.

-----Original Message-----
From: Dave Hatter [mailto:dhatter@fortwright.com]
Sent: Wednesday, March 02, 2016 4:09 PM
To: Joyce Woods <jwoods@fortwright.com>
Subject: RE: Question

Thanks for the information. I need you to initiate 2 wire transfers today for an international payment and a local payment also. Let me know what information is required.

Sent from my iPhone

Sorry Dave,

I just got your message. I have been working on other things. If you mean the General Fund Checking Acct. the balance today is $4,285,408.72.

Joyce

From: Dave Hatter [mailto:dhatter@fortwright.com]
Sent: Wednesday, March 02, 2016 12:35 PM
To: Joyce Woods <jwoods@fortwright.com <mailto:jwoods@fortwright.com> >
Subject: Question

Are you available? I need to ask you a quick question What is the present balance in the operating checking account? Reply as soon as possible.

Sent from my iPhone

Joyce Woods
To: David Hatter;

From: Dave Hatter [mailto:dhatter@fortwright.com]
Sent: Wednesday, March 02, 2016 12:35 PM
To: Joyce Woods <jwoods@fortwright.com>
Subject: Question

Are you available? I need to ask you a quick question What is the present balance in the operating checking account? Reply as soon as possible.

Sent from my iPhone

Messaging Security

- Think Skype or Messenger
- Messaging opens a channel to your device
- Great way to communicate real-time with colleagues
- Can be used to transfer files which contain “malware”
- Can be used for Phishing & Malvertising
- Need to evaluate risk versus benefits
- Must keep client software updated

Web Browser Security

- Enable Security features in your browser
  - Keep browser software updated (patches)
  - Disable cookies, or at least prompt
  - Disable JavaScript
  - Disable Java applets
  - Disable Active X
  - Disable plug-ins
  - Block pop-ups
  - Don’t save passwords
  - Don’t auto-fill forms
  - Look for SSL encryption on e-Commerce sites

Web Browser Security

- Use a secure browser
  - A study has found that Chrome is the most secure browser of the top 3 browsers
  - User Browser plug-in to supplement security
  - Consider using Tor
  - http://www.techworld.com/security/best-8-secure-browsers-2016-3246550/

Social Media

- New channels for attack
  - Phishing
  - Malware
  - Social Engineering
  - Identity Theft
  - Malvertising
  - Reputation

Mobile Security

- Mobile devices are increasingly attacked
  - Convergence of functionality in mobile devices
  - “Smart” phones are getting smarter
  - Many people increasingly use these devices
  - Follow same precautions as PC
  - Beware of public Wi-Fi
  - Install updates regularly!
  - Understand privacy implications of PII
  - Implement AV software
  - Keep firmware on device updated

Website Threats

- SQL Injection
- Input validation
- Authentication
- Malware
- Defacement
- Cross-site scripting
- Unauthorized access
- E-Commerce
  - PCI compliance

The Cloud

- Outsourcing with a new name
  - IaaS: Infrastructure as a Service
  - PaaS: Platform as a Service
  - SaaS: Software as a Service
- *Could* be more secure…
  - Experts whose business model depends on security
  - Provides a much larger and more attractive target for thieves and hackers
  - Outsource your security

Internet Of Things (IoT)

- Intelligent Internet connected devices create new risks
- Many of these devices were not designed with security in mind
- Can be used as a conduit to attack a network
- Can be used to host malware
- Can be used to spy on you and your organization
- Could be shutdown remotely
- Understand risks/rewards before adding them to your network

Summary

- Always maintain a healthy dose of skepticism / paranoia!
- Doubt everything & proceed with caution
- If you’re not paying with money, you’re paying with data
- Threats emerge and evolve constantly
- Education and awareness is critical
- 100% secure it nearly impossible

“Just because I’m paranoid, doesn’t mean they’re not out to get me” – Unknown

What are you waiting for?

“The perfect is the enemy of the good”

- Voltaire

Start getting secure now!

Outline

- Threats
- Physical Security
- Email
- Updates/Patches
- Social Media
- Mobile
- Website security
- Data Security /PCI
- Cloud / IoT
- Q&A

Resources

- www.mcaffee.com
- www.grisoft.com
- www.symantec.com
- www.lavasoft.com
- www.safer-networking.org
- www.zonealarm.com
- www.webopedia.com
- www.hackerwatch.org
- www.wardrive.net
- www.antiphishing.org/
- www.ftc.gov/bcp/conline/pubs/alerts/phishingalrt.htm
- www.microsoft.com/athome/security/email/phishing.mspx
- www.idtheftcenter.org/facts.shtml
- windows.microsoft.com/en-us/windows-8/windows-update-faq
- www.ic3.gov/default.aspx

Questions?

Q & A

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www.twitter.com/davehatter

Catch me on Tech Friday on 55KRC at 6:30 a.m.