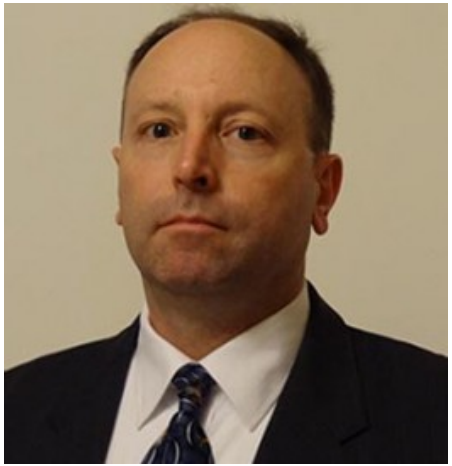
CYBER SECURITY SUMMIT 2016

Ransomware Destructive Attack

Jay Spreitzer, Vice President, Cyber Threat Management
Wells Fargo Bank

About - Jay Spreitzer



Has over 18 years information security experience. Over the last 10 years as a senior member of a cyber intelligence team at Wells Fargo. Prior to joining Wells Fargo Jay retired from the US Army, after 23 years of service working in various technology and information security roles. He holds a Masters in Information Assurance and Security as well as multiple computer security certifications.

What is ransomware?

Ransomware is a type of malware that can be covertly installed on a computer without knowledge or intention of the user that restricts access to the infected computer system in some way, and demands that the user pay a ransom to the malware operators to remove the restriction.

Some forms of ransomware systematically encrypt files on the system's hard drive, which become difficult or impossible to decrypt without paying the ransom for the encryption key, while some may simply lock the system and display messages intended to coax the user into paying.

What is ransomware?

Ransomware wreaking havoc in American and Canadian hospitals

Tech & Science March 23, 2016

Spike in ransomware spam prompts warnings

Technology, March 10, 2015

Ransomware alert issued by US and Canada following recent attacks

April 4, 2016,

Big paydays force hospitals to prepare for ransomware attacks

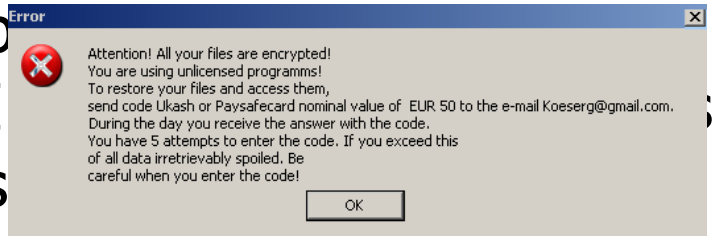
Tech, April 23, 2016

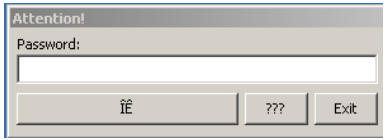
The first known ransomwares and its evolution

- AIDS Diskette ransomware discovered in 1989.
- Contained a warning message in the letter regarding licensing fee and penalty.
- Users were supposed to send a license fee to a PO box in Panama fo rporation.”

The first known ransomwares and its evolution

- Gpcoder was ransomware discovered in 2005
  - 2005 encoded 15 different file types
  - 2012 encoded 41 different file types
  - 2015 encoded 228 different file types
- Encryption 1024-bit to 4096-b
- I s to s





Creates the file ATTENTION!!!.txt in every folder in which it encoded a file. The textfile contains the following:

Some files are coded. To buy decoder mail:
[user]@yahoo.com
with subject: PGPcoder 000000000032

Hello, your files are encrypted with RSA-4096 algorithm http://[REMOVED]).

You will need at least few years to decrypt these files without our software.

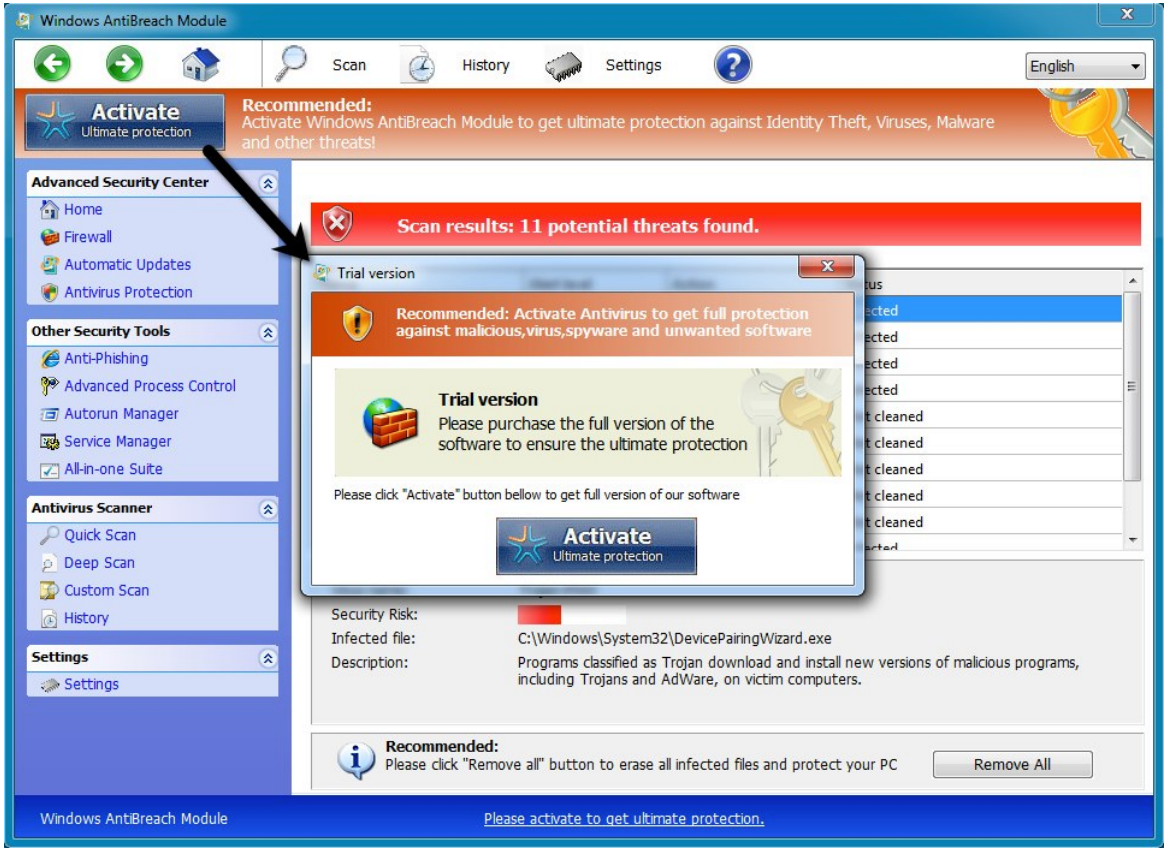
All your private information for last 3 months were collected and sent to us.
To decrypt your files you need to buy our software. The price is $300.

To buy our software please contact us at: [MAIL ADDRESS] and provide us your personal code [PERSONAL CODE].

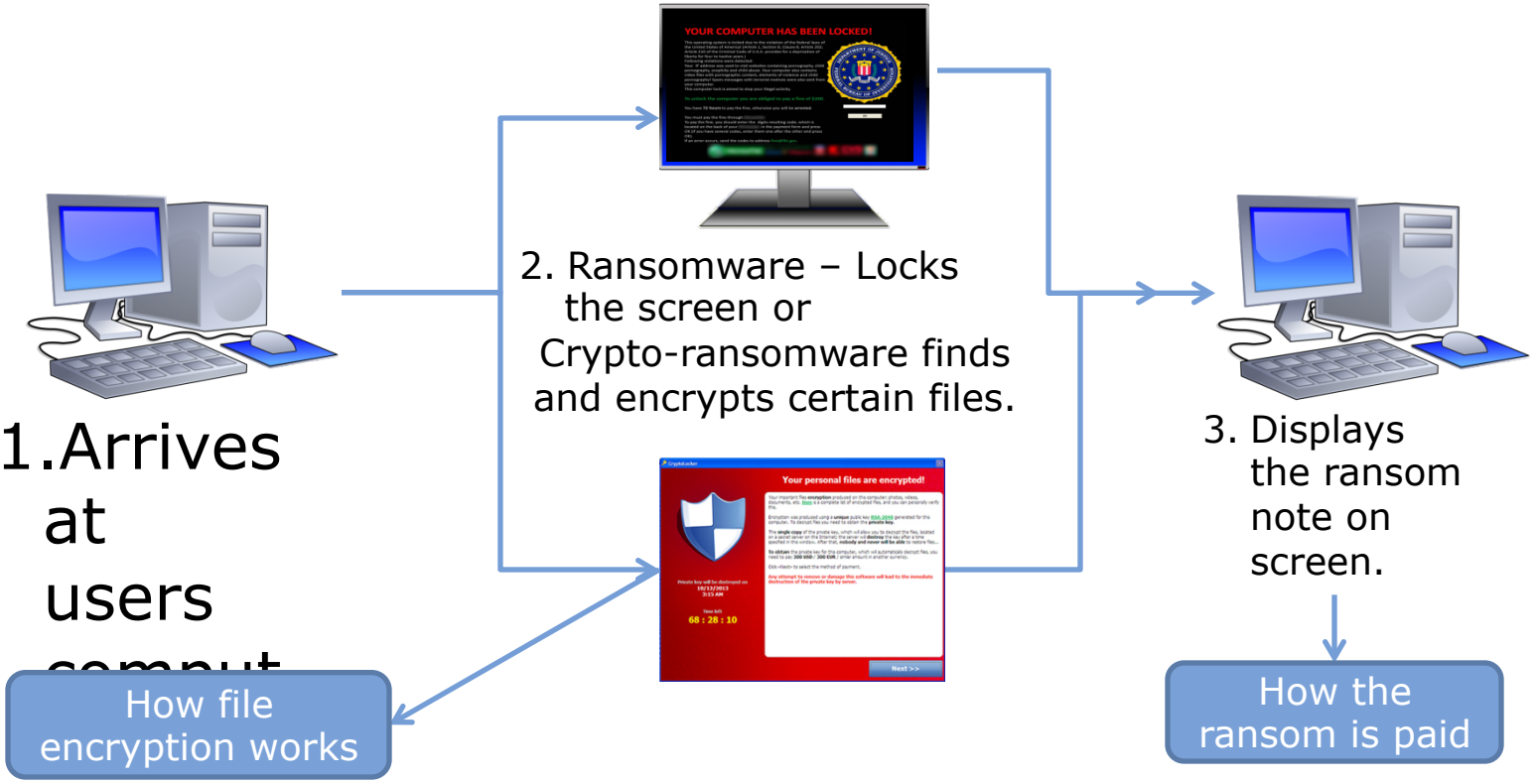
After successful purchase we will send your decrypting tool, and your private information
will be deleted from our system.
If you will not contact us until 07/15/2007 your private information will be shared and you will lost all your data.

Glamorous team

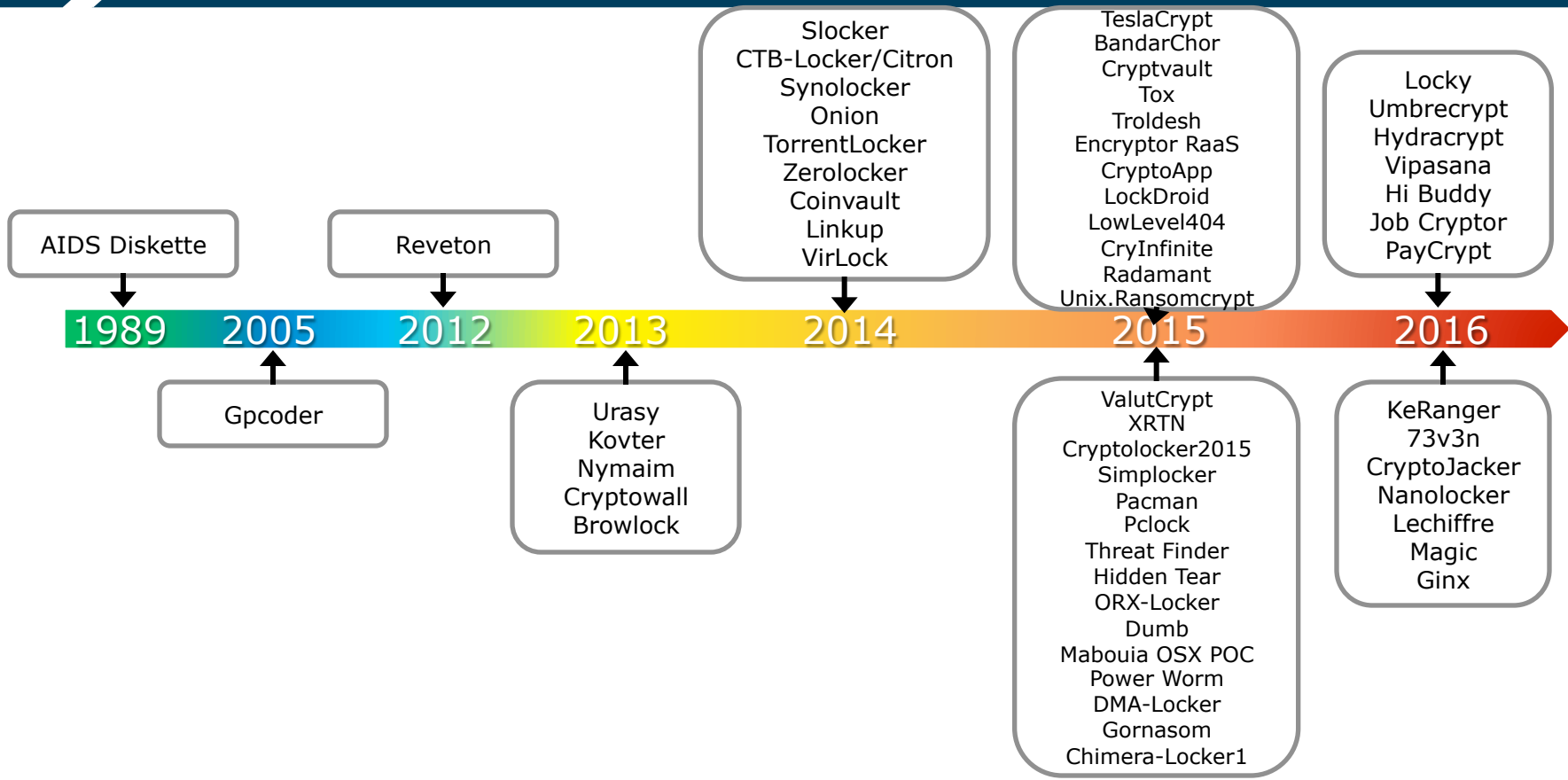
Fake Anti-Virus and Scareware



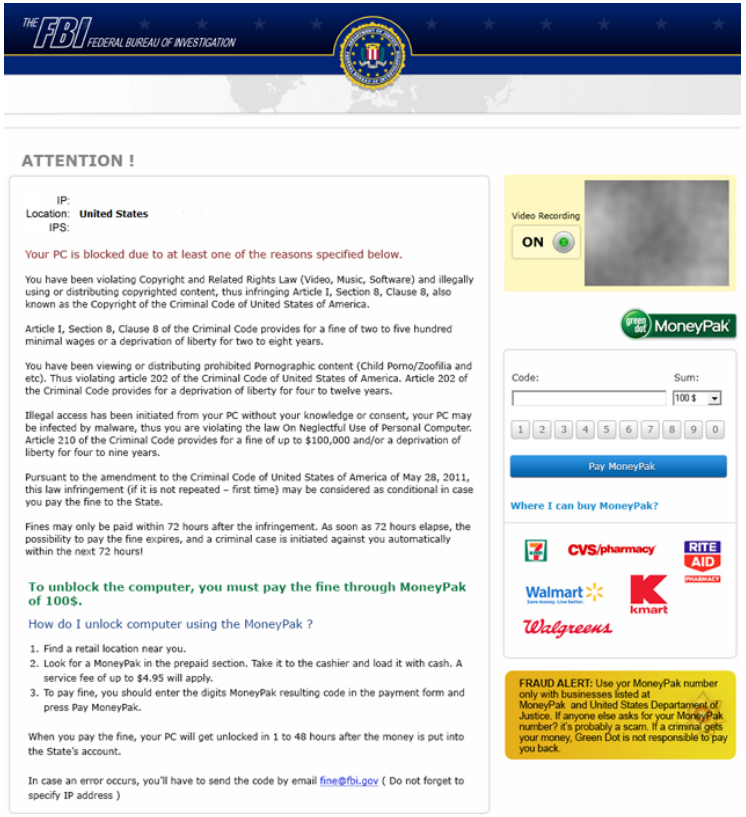
The way ransomware/crypto-ransomware works



Malware Family Variants Timeline



Lock screen ransomware

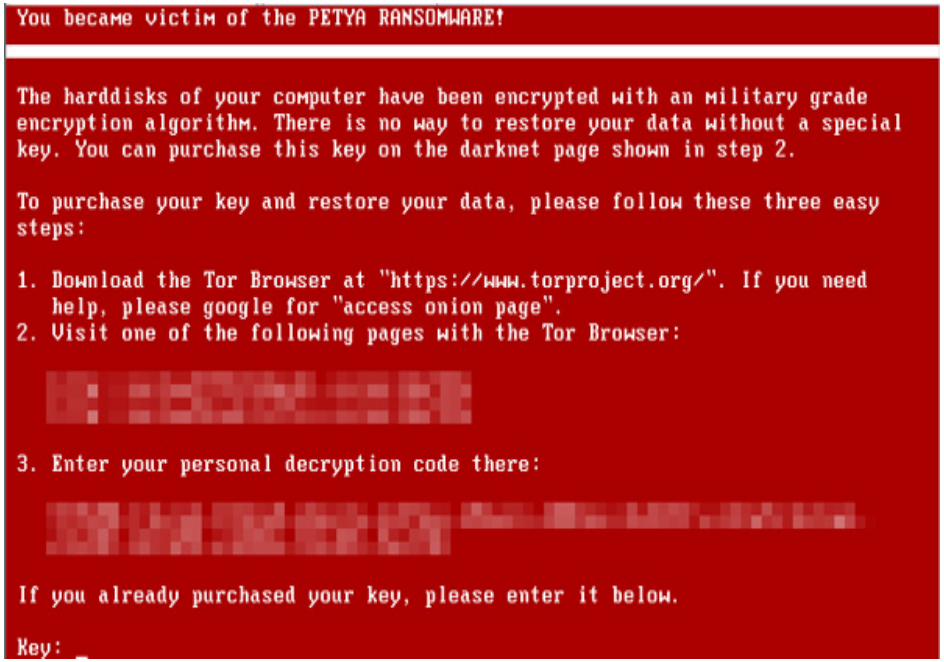


Reveton "Police" Ransomware

Lock screen ransomware

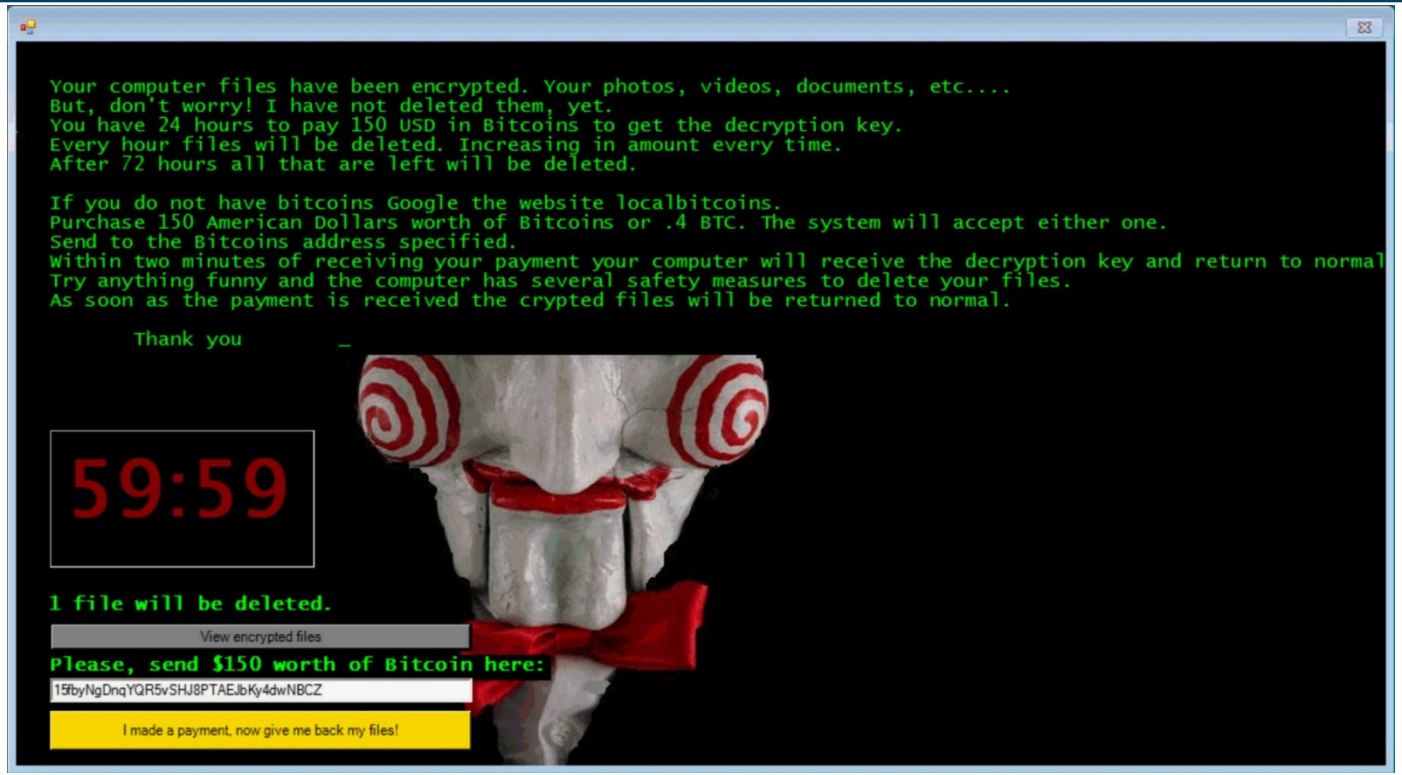
The marked shift from scareware to crypto-ransomware

CryptoLocker Ransomware
(2013)



Petya Ransomware
(2016)

File encryption and deletion ransomware

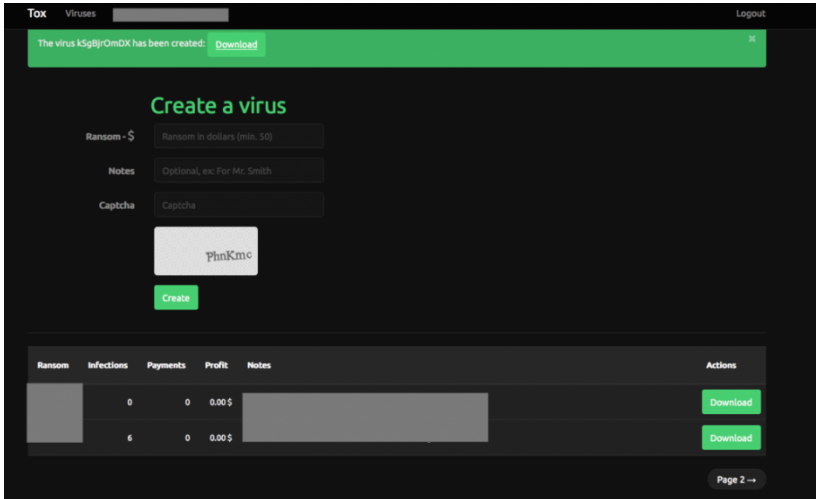


Jigsaw Ransomware

(2016)

Miscellaneous Evolution ~2015

- Ransomware-as-a-Service (RaaS)
  - Tox and Encryptor RaaS
- Targeting – Targeted vs Spammed
- JavaScript Ransomware
- Delayed Execution
- Decrypters



Current State: 2016 – Present & Impact

- Spike in Media Attention
- Hospitals/targeting
- New Variant ~1-2 weeks
- Targeting enterprises using vulnerably third party applications like JBoss
- New Threat actors with better/newer skills and specializations

TLP: GREEN

FBI FLASH

FEDERAL BUREAU OF INVESTIGATION, CYBER DIVISION

18 February 2016

Alert Number

MC-000068-MW

Please contact the FBI with any questions related to this FLASH Report at either your local **Cyber Task Force** or **FBI CYWATCH**.

Email:

FBI Liaison Alert System

This product is released at TLP: GREEN. The information in this product is useful for the awareness of all participating organizations, as well as with peers within the broader community or sector. Recipients may share this information with peers and partner organizations within their sector or community, but not via publicly accessible channels.

The FBI is providing the following information with **high confidence**:

Summary

The threat of ransomware continues to grow due to the relative availability of necessary tools, as well as the potential for extorting large sums of money. Modern ransomware uses strong encryption to render victims' files unreadable until the attackers are paid, often in Bitcoin, and release the

Current State: 2016 – Present & Impact

- Locky
  - Utilized malicious Word macros
  - Dridex distribution
- Petya
  - Overwrites master boot record (MBR)
- KeRanger
  - Second known OS X ransomware variant
- SamSam/Samas/Maktub
  - Attackers used server side vulnerabilities (Jboss) to deliver the ransomware
  - Targeted attacks
  - Not a worm, but shares characteristics…
- JIGSAW
  - File Deletion

Mitigation/Preventions

- Enable the ‘Show file extensions’ option in the Windows settings on your computer.
- Ensure patches are applied for all vulnerabilities
- Ensure anti-virus/endpoint protection up-to-date
- Ensure end-users are educated to follow security best practices
  - Avoid suspicious email curiosity
  - Do not enable Macros on Office documents
- Ensure regular backups are made to protect data
- Exercise privilege restriction, limit admin access, network segmentation, DMZ hardening, etc.
- Limited open shares
- No more ransomware: https://www.nomoreransom.org/

Where could ransomware go from here?

- “Cryptoworms”
- Cloud-specific
- (Even more) Targeted attacks
- (Better) Mobile variants
- Internet of Things (IoT)
- Greater evasion and detection avoidance capabilities

Sources and additional reading

- https://www.virusbulletin.com/uploads/pdf/magazine/1990/199001.pdf
- https://www.symantec.com/security_response/writeup.jsp?docid=2005-052215-5723-99&tabid=2
- http://blog.talosintel.com/2016/04/ransomware.html#toc
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Open discussion and questions