THURSDAY, MARCH 26TH ~ 4:40 PM TO 5:30 PM

FORENSIC AUDITING: A TOOL FOR FRAUD PREVENTION AND DETECTION

Ciro Cuono, CPA, Partner
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O'Connor Davies, LLP

I. Increasing the Visibility of the Cyber Threat Landscape

II. Forensic Auditing Can Increase Awareness

- Risks to Protected Personal Information
- Assets
- Revenue
- Reputation

III. Gaining Insights Into the External and Internal Threat Factors That Perpetuate Cyber Fraud

IV. Utilizing Forensic Auditing as a Tool

- Understanding the Proper Defenses in Preventing and Detecting Fraud

Presented at:
New York State Government Finance Officer's Association Forum (Annual)

March 24-25 2015 Albany, NY.

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Cybercrime- A Clear and Present Danger

The Internal and External Threat

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Objectives

- Increase visibility of the cyber threat landscape
- Increase awareness regarding the risk to protected personal information, assets, revenue, and reputation
- Gain insight into the internal and external threat actors that perpetrate cyber fraud
- Establish an understanding of the foundation for proper defenses in preventing and detecting cyber fraud

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Why Attack a Governmental Entity?

- Why Not?
- Governmental Entities have:
  - Bank accounts
  - Employee payroll
  - Employee personal information
  - Resident personal information
  - Perform EFT transactions
  - Credit card processing
  - Electronic health records

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Indisputable Cyber Truths

- Any governmental entity that is connected to the internet can become a victim
- Any governmental entity that uses software to manage their operations (business, home, car, etc.) can become a victim

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Indisputable Cyber Truths

- A governmental entity does not need to be a target to become a victim of "hacking"
  - Majority of attacks are opportunistic and not targeted
- What does this all mean?
  - **ANYONE** can become a victim of a cyber attack

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Cyber Fraud is Big Business

- Malware is specifically written to target your bank accounts
  - ZeuS
  - SpyEye
- Banking Malware is for sale on the web
  - Crime gangs are hiring rogue programmers to create new and modify existing malware to evade detection from anti virus software

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Cyber Fraud is Big Business

- The cyber underground has developed a business model of providing turnkey cyber crime solutions hosted by criminal organizations
  - Malware as a Service ("MaaS")
  - Fraud as a Service ("FaaS")
  - Attacks as a Service ("AaaS")

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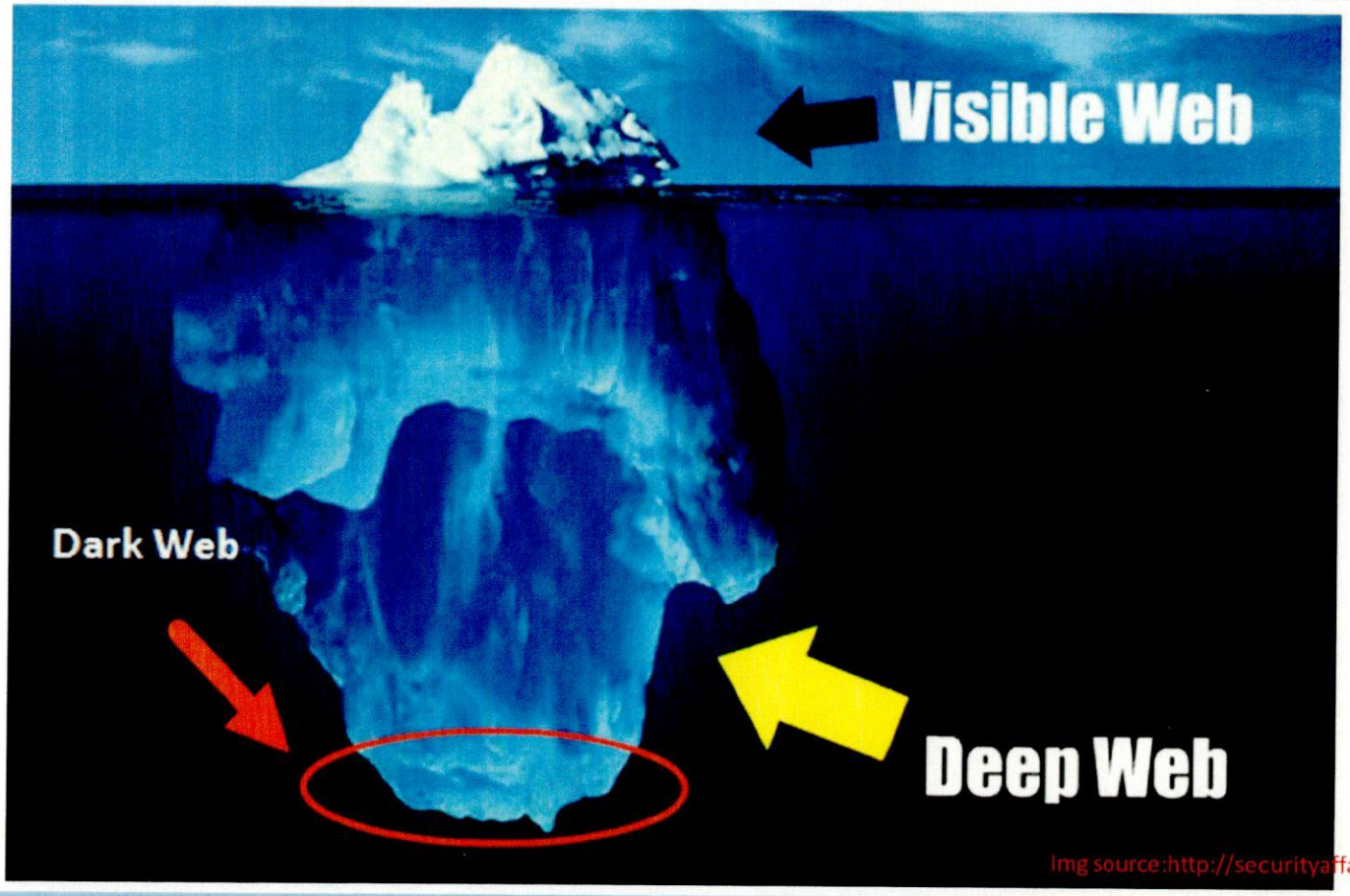
Cyber Fraud is Big Business



Img source:http://securityaffairs.co/

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Cyber Fraud is Big Business

Simon

Posted 02 July 2013 - 12:10 PM

Posts: 6
Number: 12591

Selling EU and US bank accounts that include:

- Online banking user name
- Online banking password
- Any data needed for secret questions or authentication
- The victim's IP and SOCKS proxy on the victim's device

Img Source - Trusteer

Не сервис, продажи разовые, пишете в ПМ какая нужна страна, скидываю что есть и почем.
Происхождение аккаунтов - работаю на человека по обработка его логов, оплата мне идет 50/50 аккаунтами.

К оплате принимаю Webmoney, PerfectMoney.

Если есть вопросы, предложения пишите в ПМ (предпочтительнее) или по icq [redacted]
Jabber по запросу.

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Johnny D. -
Junior Member

Johnny D. is offline

Join Date: Jan 2011

Posts: 4

Reputation: | +/-

Selling bank accounts packages:

- Bank account information + ATM card
- Online banking credentials
- Official documents (including passports)
- Price: 12,000 Ruble (~$360)

Also offering a cashout service for a 5% fee

Доставка осуществляется курьерской службой DHL или EMS, за счёт покупателя.

- Претензии по комплектации принимаются в течение суток после получения товара покупателем.
- Комплекты предназначаются для обналичивания ваших денег через банкомат, но не для хранения! За действия дропа, я несу ответственность, но за каждым уследить невозможно, соблюдайте правила, и все будет в порядке и со счетами и с нервами.

Мои контакты:

Изготовление и продажа банковских счетов с атм картами icq

Img Source
- Trusteer

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Cyber Fraud is Big Business

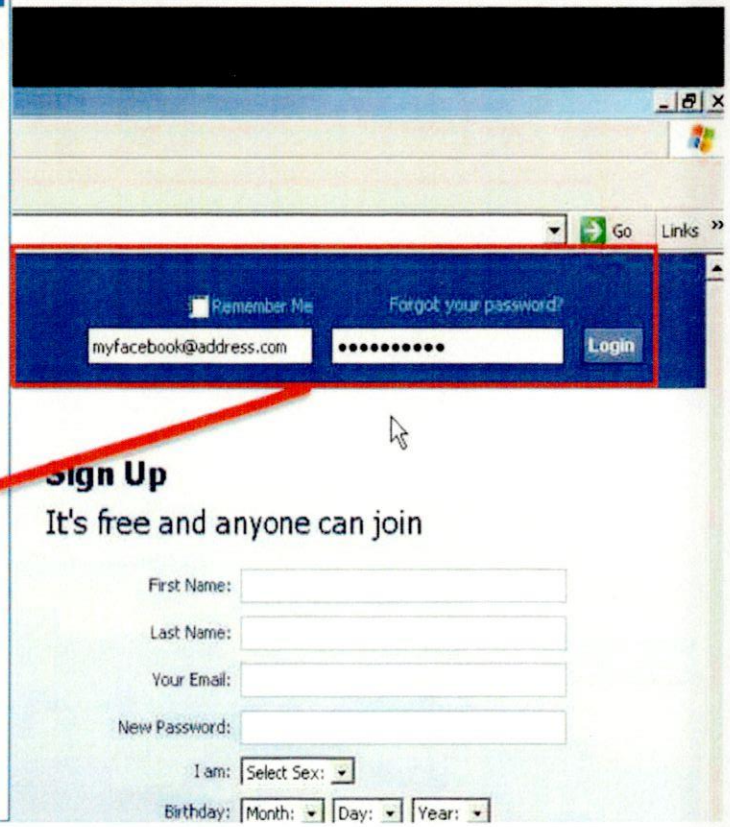
View report (HTTPS request, 424 bytes)

Bot ID:	vb4_014c5a43
Botnet:	plag
Version:	1.2.4.2
OS Version:	XP Professional SP 2, build 2600
OS Language:	1033
Local time:	07.10.2009 16:30:24
GMT:	-8:00
Session time:	06:39:34
Report time:	07.10.2009 23:30:28
Country:	--
IPv4:	192.168.1.83
Comments for bot:	-
In the list of used:	No
Process name:	C:\Program Files\Internet Explorer\iexplore.exe
Source:	https://login.facebook.com/login.php?login_attempt=1

```
https://login.facebook.com/login.php?login_attempt=1
Referer: http://www.facebook.com/
Keys: www.facebook.com
myfacebook@address.commyfacepass
Data:

charset_test=%E2%82%AC%2C%C2%B4%2C%E2%82%AC%2C%C2%B4%2C%E6%B0%B4%2C%D0%94%2C%D0%84
locale=en_US
non_com_login=
email=myfacebook@address.com
pass=myfacepass
pass_placeholder=Password
charset_test=%E2%82%AC%2C%C2%B4%2C%E2%82%AC%2C%C2%B4%2C%E6%B0%B4%2C%D0%94%2C%D0%84
lsd=TWISM
```

Zeus: Retrieved Form Data



Zeus: Retrieved Form Screenshot

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Cyber Fraud is Big Business

Search

Update companies

#	Name	Job	Company	Tax data	Pin	Transfer info	Use
1420		DIR OF SALES		YES	86885	**$3,599.19** to num	In Process
1421		SALES MANAGER		YES	11343	**$2,665.08** t	In Process
1422		TAXDIR - TAX DIRECTOR		YES	41122	**$4,293.20** to a8 amex	In Process
1423		TECHNICAL SUPPORT		YES	02933		used
1424		HR - HR ASSISTANT		YES			not used
1425		MARKETING COORDINATOR		YES	65533	**$2,113.17** to a8 amex donj8j xNUnjo0N2	In Process
1426		VPCOMINC - VICE PRES COMMUNICATIONS		YES	46782	**$2,204.82** to a8 amex	In Process
1427		ADMINISTRATIVE ASST		YES	88398	**$4,263.42** to a8 amex	In Process
1428		VP SALES		YES	47234	**$2,437.04** to a8 amex	In Process

Img Source Krebs on security

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Electronic Fund Transfer Fraud

- Electronic Fund Transfers ("EFT's") – The electronic exchange or transfer of money from one account to another

  Examples: Direct Deposit, Direct Debit, Electronic Bill Payment, Wire Transfers

- Can be classified as a Wire Transfer or Automatic Clearing House ("ACH") Transaction.

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Commercial vs Consumer EFT's

- Commercial and Consumer EFT's are protected differently under the law
  - Consumers are protected by the Electronic Funds Transfer Act
    - Consumers are allowed up to 60 Days to report fraudulent transactions
  - Commercial EFT's are regulated by the Uniform Commercial Code Article 4A
    - Businesses are allowed up to two days to report the fraudulent transaction depending if it was an ACH or Wire Transfer

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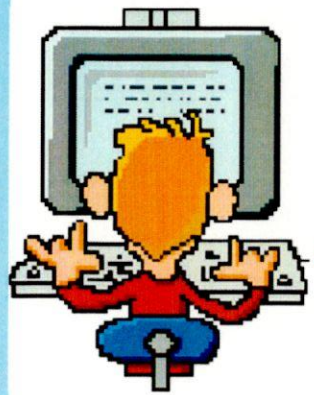
Banking Malware In Action

Initial Balance $5,000



Wire $500 to
Acct # 12345
Bank: ABC

Wire $2,000 to
Acct # 54321
Bank: XYZ

Wired $500 to
Acct # 12345
Bank: ABC
Balance: $4,500

Wired $2,000 to
Acct # 54321
Bank: XYZ
Balance: $3,000

Final Balance $3,000

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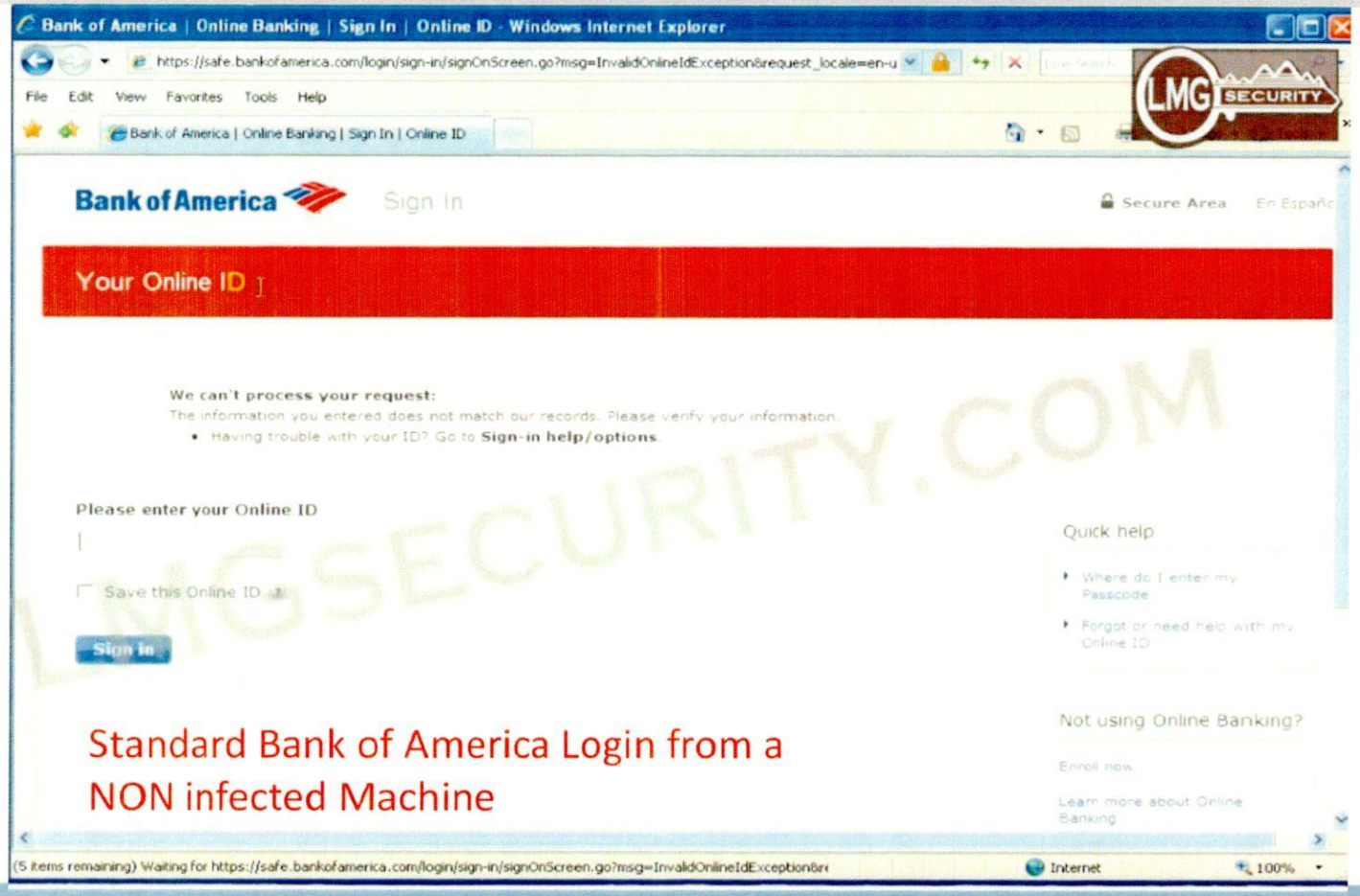
Banking Malware In Action



Standard Bank of America Login from a NON infected Machine

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Banking Malware In Action (cont…)

Bank of America | Online Banking | Authorization - Windows Internet Explorer

https://safe.bankofamerica.com/login/sign-in/signOnScreen.go?msg=InvalidOnlineIdException&request_locale=en-u

File Edit View Favorites Tools Help

Bank of America | Online Banking | Authorization

Bank of America Sign In Secure Area En Españ

Confirm your identity

We can't process your request:
The information you entered does not match our records. Please verify your information.
- Having trouble with your ID? Go to **Sign-in help/options**.

We do not recognize the computer you are using. Please confirm your identity from this unrecognized computer.

Location where your accounts were opened:

State: Select location

City:

ATM or Debit Card Information:

Card Number:

15 or 16 digits no dashes or spaces

Expiration Date :

Quick help

What do I need to know?

Done Internet 100%

Same page from an infected machine (Part 1)

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Banking Malware In Action (cont…)

Bank of America | Online Banking | Authorization - Windows Internet Explorer

https://safe.bankofamerica.com/login/sign-in/signOnScreen.go?msg=InvalidOnlineIdException&request_locale=en-u

File Edit View Favorites Tools Help

Bank of America | Online Banking | Authorization

ATM or Debit Card Information:

Card Number:

15 or 16 digits, no dashes or spaces

Expiration Date :

Security Code:

Personal Information:

Social Security Number:

Date Of Birth:

Driver's License Number:

Mother's Maiden Name:

Remember computer:

Do you want us to remember this computer, so you can avoid answering your personal information next time you sign in?

Yes

No

Continue

Done

Internet

100%

Page Scrolled Down on Infected Machine

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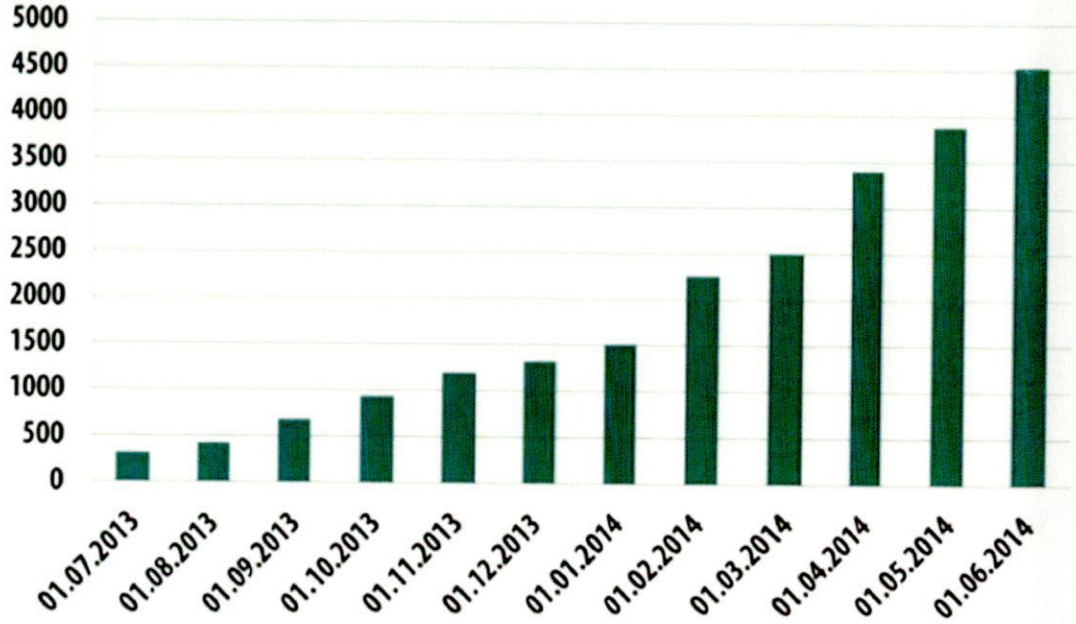
Mobile Device Malware - Why Worry?

Mobile Malware grew 614% from March 2012 to March 2013



Number of mobile banking Trojans detected, Q2 2014

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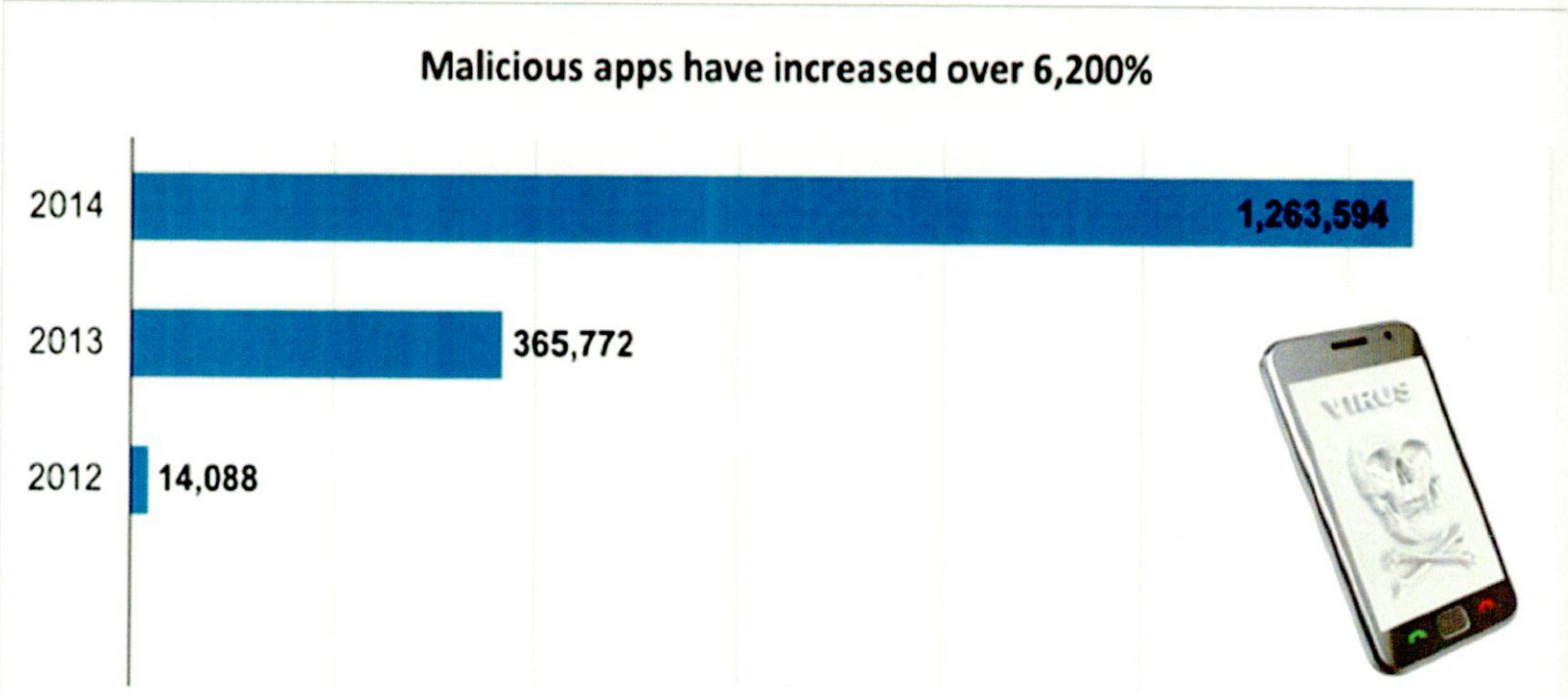
Mobile Device Malware - Why Worry?



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Mobile Device Malware - Why Worry?

- What have the attacks accomplished?
  - Text messages intercepted and forwarded - specifically when banks send text messages with one-time codes to log in
  - Record phone calls - turn on microphone to record conversations
  - Track GPS location remotely
  - Send text messages to premium services increasing fees
  - Destroy the phone or components (Camera, Messaging, etc.)

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Mobile Device Malware - Why Worry?

Today's Threats

HijackRAT disguised as Google Service Framework combines various hijacking techniques to allow hijacker to:

- Steal and send SMS messages
- Steal contacts
- Initiate malicious app updates
- Scan for installed legitimate banking apps on the mobile device and replace them with fake utilities
- Attempt to disable mobile security software or antivirus installed on a compromised Android device

Source:Webroot

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Cyber Extortion – A Closer Look

- Entities are being held ransom at the risk of:
  - Releasing protected or personal data
    - Threats may be placed to expose employee SSNs or health information on file
  - Denial of service
    - Systems could be brought to a crawl or taken offline.

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Cyber Extortion – A Closer Look (con't)

- Entities are being held ransom at the risk of:
  - A ransomware variant placing child pornography on your system and threatening to alert the authorities

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Cyber Extortion – A Closer Look (con't)

Cryptolocker 2.0

Your personal files are encrypted

Your files will be lost without payment on:

11/24/2013 3:16:34 PM

Info

Your **important files were encrypted** on this computer: photos, videos, documents , etc. You can verify this by click on see files and try to open them.

Encryption was produced using **unique** public key RSA-4096 generated for this computer. To decrypt files, you need to obtain **private** key.

The single copy of the private key, which will allow you to decrypt the files, is located on a secret server on the Internet; **the server will destroy the key within 72 hours after encryption completed**. After that, nobody and never will be able to restore files.

To retrieve the private key, you need to pay 0.5 bitcoins.

Click **proceed to payment** to obtain private key.

Any attempt to remove or damage this software will lead to immediate private key destruction by server.

See files | << Back | Proceed to payment >>

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Verizon Data Breach Report - 2014

- Point of Sale Intrusions
- Web app attacks
- Insider misuse
- Physical theft/loss
- Miscellaneous errors
- Crimeware
- Card Skimmers
- Dos Attacks
- Cyber Espionage

OF THE INCIDENTS WE'VE SEEN OVER THE LAST 10 YEARS — AND 94% OF THE BREACHES IN 2013 — CAN BE DESCRIBED BY JUST NINE PATTERNS.

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The Insider Threat

- To have a holistic security program you must also consider the threat within
- Whenever an individual is given access to your environment, they pose a risk
- The individuals can be:
  - malicious and wish to perpetrate fraud or steal data; or
  - Insufficiently trained and monitored and cause data entry errors or introduce malware into the environment

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The Insider Threat

- Majority of financial fraud is still committed by the inside "trusted employee"
  - Data theft is predominately committed by external actors
- The "trusted employee" is in most cases leveraging the financial applications to commit and conceal the fraud

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How Do We Protect the Entity?

- Do not underestimate your cyber risk and fraud exposure – SIZE DOES NOT MATTER!
- Conduct a formal cyber security/IT risk assessment
- Do not assume that information security is an IT issue alone
  - IT Security is a business issue that requires the assistance of a technical solution

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How Do We Protect the Entity?

- Ensure you have a resource that can effectively communicate the identified risks in understandable and business related terms
  - In order to manage risk, you need to first understand it
- Establish or verify you have a strong IT security governance program
- Know your compliance obligations

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How Do We Protect the Entity?

- Provide routine security awareness training
  - Your employees are your biggest security investment and vulnerability
  - Phishing training is essential
- Perform due diligence on all third parties
  - Vendor management and monitoring is critical
  - Vendors are a means to delegate a task Responsibility will always remain with the Entity and cannot be delegated

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How Do We Protect the Entity?

- Have independent IT security evolutions/audits
  - IT is one of the highest risk areas in your Entity but also the least understood and controlled
  - Internal IT sometimes has difficulty seeing the "forest from the trees"
  - Security and Operations have different goals and skill sets
  - IT is often under resourced

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How Do We Protect the Entity?

- Use two-factor authentication when possible
  - If not possible, strong passwords are key
  - Train employees to use passphrases
    - "GoodLuckCrackingThisP@ssword!"
- Implement data loss prevention software
- Isolate key assets and data

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How Do We Protect the Entity?

- Ensure:
  - Users are provided the minimum privileges necessary
  - Incompatible roles are separated
    - If you cannot separate roles, provide independent reviews and reconciliations
  - Vendor patches are up-to-date and installed consistently and timely (Operating System and Third party Apps) (e.g., adobe, flash, java, etc.)
  - Antivirus is installed, active and up-to-date

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How Do We Protect the Entity?

- Ensure:
  - Network devices (routers, switches and firewalls) are configured correctly and securely using industry guidelines (e.g., Center for Internet Security)
  - Default vendor passwords are changed

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How Do We Protect the Entity?

- Ensure:
  - Effective monitoring and sufficient logging (operational and security)
    - A control is only as good as the control that exists to monitor it
    - All access to sensitive data and all sensitive transactions executed should be recorded and traceable to a person
  - A backup and disaster recovery strategy exists that meets the business requirements for acceptable downtime and data loss

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How Do We Protect the Entity?

- Ensure:
  - IT administrators are assigned separate credentials for management and non-management activities (browsing the web, e-mail, etc.)
- Have an incident response plan
  - It is a not a matter of if but when you will be breached

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How Do You Protect Your Entity?

- Mobile Device Protections:
  - Have a documented and defined mobile device policy
    - Critical if allowing employees to use their own device (BYOD)
  - Require phones be password protected
    - Enforce this via a system control and not the honor system

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How Do We Protect the Entity?

- EFT Fraud Protections:
  - Dedicate computers for online banking
  - Segregate EFT functions between initiator and approver
  - Establish ACH Debit Filters or Blocks
  - Dedicate clearing accounts using "just-in-time" deposits
  - Reconcile EFT Transactions daily
  - Establish restrictive dollar transfer limits

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How Do We Protect the Entity?

- EFT Fraud Protections:
  - Use multifactor authentication
  - Require additional "out-of-band" authorization or notifications of transfers (call back, text message, etc)
  - Establish ACH Debit Filters or Blocks
  - Dedicate clearing accounts using "just-in-time" deposits

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Questions?

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