Trends in Cyber Crime and How to Protect Your Institution

Mark Eich and Christina Bowman

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  - Outsourcing
  - Audit, Tax, and Consulting
- More than 4,500 employees
- Offices coast to coast
- With more than 60 years of experience in the nonprofit sector, we have one of the largest nonprofit practices in the country

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Speaker Introductions

- **Mark Eich, CPA**

  Principal

- **Christina Bowman, CPA**

  Senior Manager

Learning Objectives

- At the end of this session, you will be able to:
  - Name current hacking trends and how they are enabled
  - Identify the key role employees / users play in security
  - Illustrate how to better defend your organization from these types of attacks

Cyber Crime in Action: A Case Story

Case Study- ABC Institution

- Request from President to CFO via email
- Payment for purchase of $75,000 of computer equipment is OVERDUE
- Several correspondence back and forth requesting additional documentation, all received timely and as requested
- International wire sent late afternoon on Day 1

Case Study- ABC Institution (continued)

- How could this happen?
  - Someone is on vacation that is usually involved in the process
  - Emails AT FIRST are masked to appear legit, including signature line

Case Study- ABC Institution (continued)

- Day 2- CFO follows up with IT and Procurement to verify computer purchases

- Request a stop payment with the Bank

- Case reported to Bank's fraud division, local FBI office as well as Internet Crime Compliant Center (IC3), a partnership between the FBI and the National White Collar Crime Center

2016 Trends in Cyber Crime

Themes

- Hackers have “monetized” their activity
  - More hacking
  - More sophistication
  - More “hands-on” effort
  - Smaller organizations targeted

What Are They Doing?

- Organized Crime
  - Wholesale theft of personal financial information
- CATO– Corporate Account Takeover
  - Use of online credentials for ACH, CC, and wire fraud
- Ransomware

Black Market Economy - Theft of PFI and PII

Active campaigns involving targeted phishing and hacking focused on common/known vulnerabilities.

- Target
- Goodwill
- Jimmy Johns

- University of Maryland
- University of Indiana

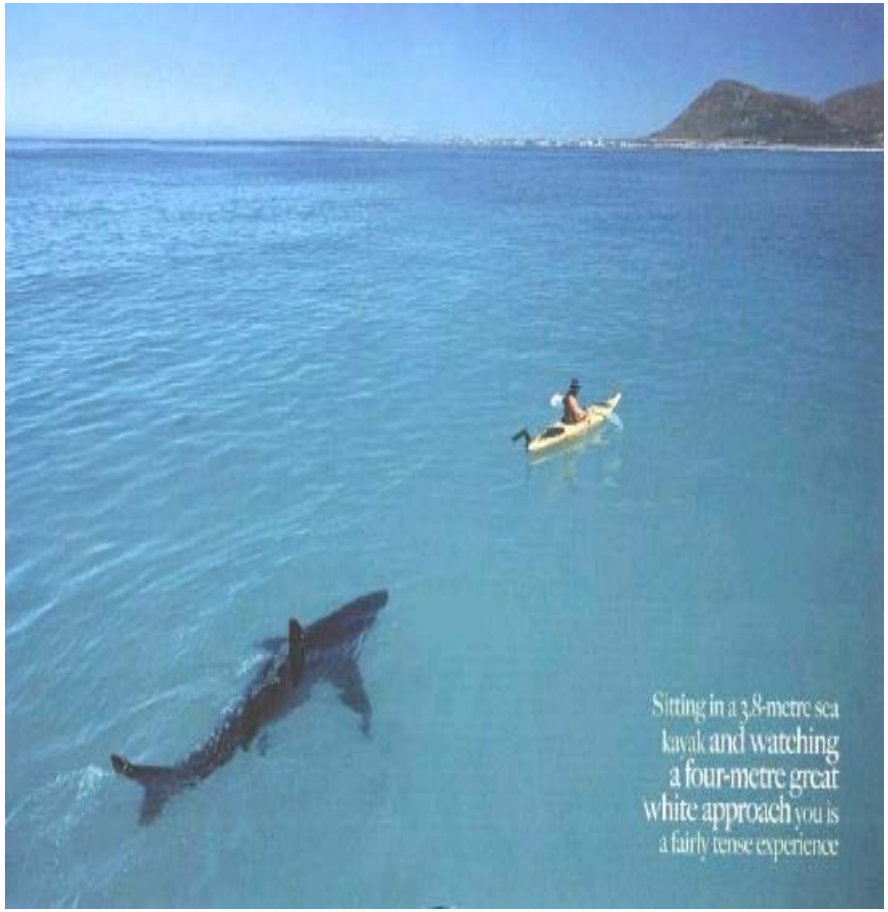
- Anthem
- Blue Cross Primera

- Olmsted Medical Center
- Community Health Systems

Corporate Account Takeover

- Catholic church parish
- Hospice
- Collection agency
- Main Street newspaper stand
- Electrical contractor
- Health care trade association
- Rural hospital
- Mining company

- On and on and on and on…….



CATO – Three Versions

- Deploy malware – keystroke logger
- Deploy malware – man in the middle
- Recon / email persuasion (“Whaling”)

CATO Defensive Measures

- Multi-layer authentication
- Multi-factor authentication
- Out of band authentication
- Positive pay
- ACH block and filter
- IP address filtering
- Dual control
- Activity monitoring

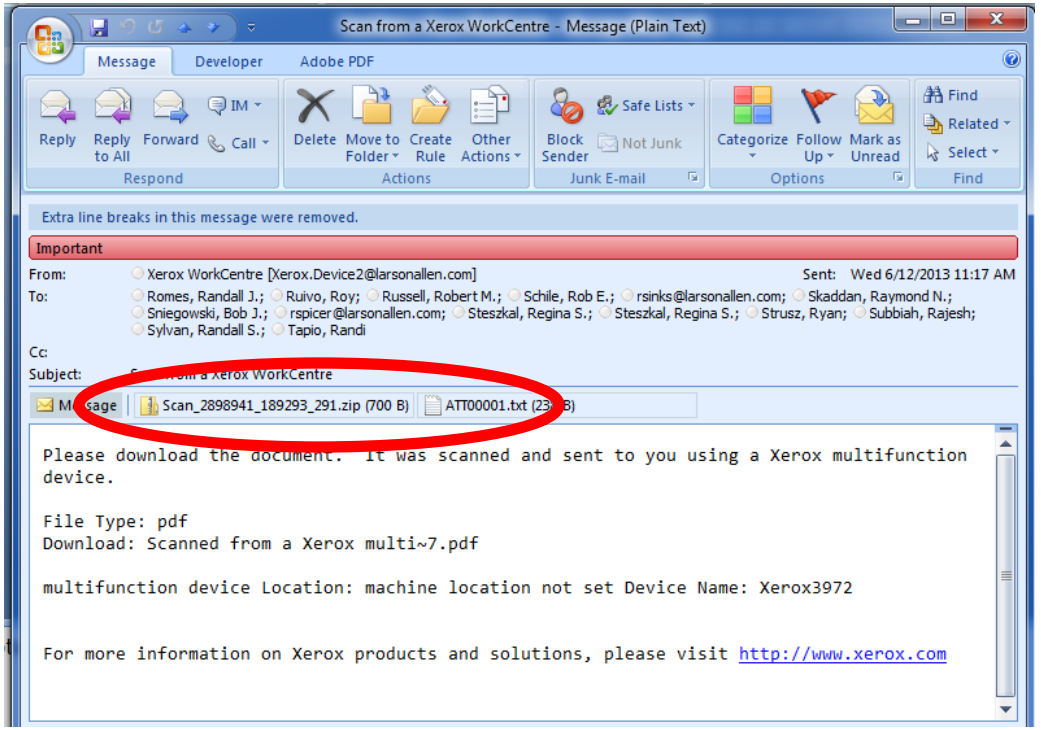
Ransomware

- Malware encrypts everything it can interact with
  - V1: Everything where it lands
  - V2: Everything where it lands plus everything user has rights to on the network
  - V3: Everything where it lands plus everything on the network

- CryptoLocker / Cryptowall

Ransomware

- Zip file is preferred delivery method
  - Helps evade virus protection
- Working (tested) backups are key



The Cost?

Norton/Symantec Corp:

- Cost of global cybercrime: $388 billion
- Global black market in marijuana, cocaine and heroin combined: $288 billion

Social Engineering

"Amateurs hack systems, professionals hack people."

Bruce Schneier

- Pretext phone calls
- Building penetration
- Email attacks

10 Key Defensive Measures

Attacks Are Preventable!

- Intrusion Analysis: TrustWave
- Intrusion Analysis: Verizon Business Services
- Intrusion Analysis: CERT Coordination Center
- Intrusion Analysis: CLA Incident Handling Team

Strategies

Our information security strategy should have the following objectives:

- Users who are more aware and savvy
- Networks that are resistant to malware
- Relationship with our FI is maximized

Ten Keys to Mitigate Risk

1. Strong Policies

- Email use
- Website links
- Removable media
- **Users vs Admin**
- **Insurance**

Ten Keys to Mitigate Risk

2. Defined user access roles and permissions

- Principal of minimum access and least privilege
- **Users should NOT have system administrator rights**
  - **"Local Admin" in Windows should be removed (if practical)**

Ten Keys to Mitigate Risk

3. **Hardened internal systems (end points)**
   - Hardening checklists
   - Turn off unneeded services
   - **Change default password**
   - **Use strong passwords**
   - **Consider application white-listing**
4. **Encryption strategy – data centered**
   - Email
   - Laptops and desktops
   - Thumb drives
   - **Email enabled cell phones**
   - Mobile media

Ten Keys to Mitigate Risk

5. Vulnerability management process

- Operating system patches
- **Application patches**
- Testing to validate effectiveness –
  - "belt and suspenders"

Ten Keys to Mitigate Risk

6. **Well defined perimeter security layers:**
   - **Network segments**
   - Email gateway/filter
   - Firewall – “Proxy” integration for traffic in AND out
   - Intrusion Detection/Prevention for network traffic, Internet facing hosts, AND workstations (end points)
7. **Centralized audit logging, analysis, and automated alerting capabilities**
   - Routing infrastructure
   - Network authentication
   - Servers
   - Applications

Ten Keys to Mitigate Risk

8. Defined incident response plan and procedures

- **Be prepared**
- Including data leakage prevention and monitoring
- Forensic preparedness

Ten Keys to Mitigate Risk

9. Know / use Online Banking Tools

- Multi-factor authentication
- Dual control / verification
- Out of band verification / call back thresholds
- ACH positive pay
- ACH blocks and filters
- Review contracts relative to all these
- Monitor account activity ***daily***
- **Isolate the PC used for wires/ACH**

Ten Keys to Mitigate Risk

10. Test, Test, Test

- "Belt and suspenders" approach
- Penetration testing
  - ◊ Internal and external
- Social engineering testing
  - ◊ Simulate spear phishing
- Application testing
  - ◊ Test the tools with your bank
  - ◊ Test internal processes

Questions?

Hang on, it's going to be a wild ride!!

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