Privacy Technical Assistance Center

FERPA: Data & Transport Security Best Practices

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FERPA and Data Security

- Unlike HIPAA and other similar federal regulations, FERPA does not require specific security controls
- This provides room for innovation, but also heaps more responsibility on the community to protect the privacy and security of student data
- As educators we have student data in many places, including our own machines / mobile devices
- It’s up to us to ensure that we take the necessary security measures to protect student data

FERPA and Data Security

When we talk about data security we are really talking about these three things:

- Confidentiality – "Preserving authorized restrictions on access and disclosure, including means for protecting personal privacy and proprietary information…" [44 U.S.C,. Sec 3542]
- Integrity – "Guarding against improper information modification or destruction, and includes information non-repudiation and authenticity…" [44 U.S.C., Sec. 3542]
- Availability – "Ensuring timely access to and use of information…" [44 U.S.C., Sec 3542]

Federal Information Processing Standards publication 199 (FIPS-199)

FERPA and Data Security

- Data security is about risk management
- For there to be risk there must be vulnerability and someone to exploit it
- You can never eliminate risk, you can only reduce it
- To understand the risks, you must understand the threats

Let’s Talk About Threats

Organized Crime

- Criminal hackers and scammers
- Internet crime brings in big money, prompting leniency from local authorities in some countries
- Traditional organized crime has taken an interest
- Hundreds of billions a year
- Responsible for most external data breaches
- Botnets, malware, data breaches

Let’s Talk About Threats

Hacktivism

* **Hacktivism** (a portmanteau of *hack* and *activism*) is the use of computers and computer networks as a means of protest to promote political ends.

* *http://en.wikipedia.org/wiki/Hacktivism*

- Groups of hackers motivated by ideology or political agenda
- Largely decentralized, ad hoc organizational structure
- Historically focus on industrial, financial and political targets
- Increasingly targeting educational agencies

Let’s Talk About Threats

Nation-State Sponsored

- Cyber-espionage, cyber-warfare by foreign governments
- Spying, stealing intellectual property
- Intelligence gathering
- Prepositioning cyber-warfare assets
- Highly advanced, very sophisticated
- Virtually unlimited budget
- Stealth and longevity are priorities

Let’s Talk About Threats

The enemy is US!

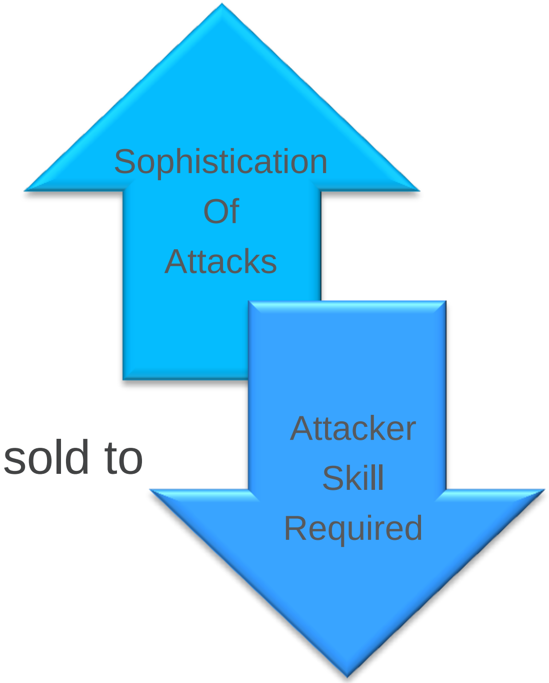
- Lost laptops, smartphones, thumb drives
- Design insecure or flawed web applications
- Open attachments from strange people / fall for phishing emails
- Send information we shouldn’t
- Misconfigure our devices
- Use untrusted Wi-Fi for sensitive activities

What do the bad guys want with my data?

- Identity information like SSNs, banking info, names and other PII
- Prove a point, make a statement
- Account info (usernames & passwords)
- Recruit your system as a part of a Botnet

More dangerous than ever

- Open source and free tools make it easy
- Hacker training sites
- Cyber-theft commoditized
  - Black market trading in identity data
  - “Do-It-Yourself” malware kits
  - Underground economy where tools are built and sold to order
- Still developing flawed code
  - Structured Query Language Injection (SQLi) discovered in 1998.. Still a major problem 15 years later
  - Poor authentication / session mgmt.



Security begins with strategy

- Starts with leadership buy-in
- Create a strong information security policy & governance architecture that is reflective of reality
- Dedicate resources to security, put someone in charge
- Implement tools, technology and automation
- Develop meaningful metrics to measure the effectiveness of your program

Data security best practices

"Defense in Depth"

- Use a layered approach to security which forces attackers to traverse multiple layers of security controls like firewalls, Web Application Firewalls (WAFs), Intrusion Detection / Prevention Systems (IDPS), antivirus, access controls, etc.
- Increases attacker effort
- Multiplies the opportunity for detection and response
- Allows you to focus the highest levels of resources where they count the most… protecting the really important data!

Patch & Vulnerability Management

- Employ tools to manage system updates and patches and remediate unpatched systems
- Especially important for third party applications
- Scan regularly for vulnerabilities and stratify validated results into a remediation plan that is ordered by severity
- Develop a procedure for deployment of updates and patches that is in line with your security policy, measure the results
- Tie results into security testing activities

Data Security best practices

Account / Password Management

- Require strong, complex passwords which are changed regularly
- Balance requirements against user acceptance. Users find ways to get around unreasonable security measures
- Consider multi-factor authentication for sensitive accounts
- Carefully monitor and manage user and service accounts to remove old or unused accounts and properly on-board new users

Data Security best practices

Encryption

- Encryption is not a replacement for good access control mechanisms
- Can be used to prevent accidental disclosure though loss of hardware like a laptop, mobile device or USB thumb drive
- Choose commonly accepted strong algorithms like those found in the Federal Information Processing Standard (FIPS) 140-2
- Key management can be challenging and the impact of lost keys can be high

What is Data Transport

- The movement of data from one system to another, often referring to the movement of large datasets to a data warehouse or the sharing of data between data systems
- Transport mechanisms can include a variety of protocols and technology
- Diversity of solutions can reduce efficiency of data transfer and increase attack surface
- Some methods can introduce security vulnerabilities and lead to potential disclosure of data

Data Transport security best practices

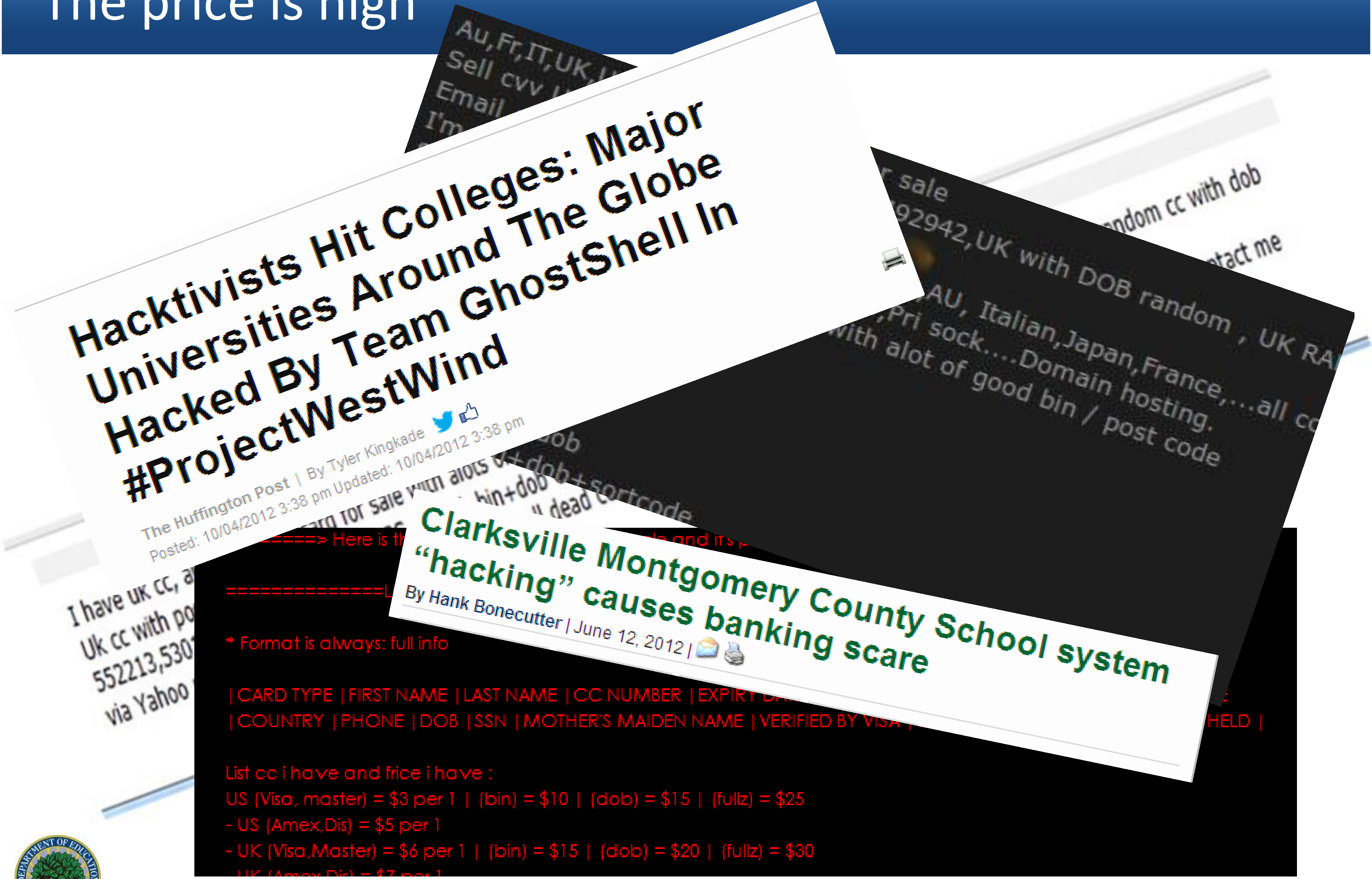
It’s all in the protocol

- When using removable storage or email, consider encryption to protect the data from loss or theft in transit
- Some transport mechanisms like File Transfer Protocol (FTP) provide little to no protection for authentication credentials or the data in transit
- Combining technologies has closed some of the security gaps:
  - FTPS or FTP Secure combines FTP with Transport Layer Security (TLS) / Secure Sockets Layer (SSL) to encrypt data in transit
  - SFTP combines the functionality FTP with the encryption capabilities of the Secure Shell (SSH) to provide a layer of encryption for transport

Data Transport security best practices

- Web services based transport mechanisms allow for a wide variety of functionality, allowing a single web service to serve as a hub for multiple applications
- Several standards exist today for the creation of web services driven data transport mechanisms for education systems
- Test the security of all data transport systems periodically and as needed to evaluate the security posture of the organization

The price is high



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Hacktivists Hit Colleges: Major Universities Around The Globe Hacked By Team GhostShell In #ProjectWestWind

The Huffington Post | By Tyler Kingkade
Posted: 10/04/2012 3:38 pm Updated: 10/04/2012 3:38 pm

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Clarksville Montgomery County School system "hacking" causes banking scare

By Hank Bonecutter | June 12, 2012 |

* Format is always: full info

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- US (Amex,Dis) = $5 per 1
- UK (Visa,Master) = $6 per 1 | (bin) = $15 | (dob) = $20 | (fullz) = $30
- UK (Amex,Dis) = $7 per 1

Protecting ourselves

- Understand the threat
- Know yourself and your vulnerabilities
  - Identify the “Crown Jewels” and protect them first
  - Assess your own systems, view them like an attacker
- Standardize (technology, data, procedures)
  - Adopt common methodologies and data standards
  - Band together with partners & share threat data
- Don’t rely on technology alone to keep you safe
  - Train users to be aware and exercise safe browsing habits
  - Be ready to respond to incidents quickly and efficiently

Protecting ourselves

- Mitigate the threat where you can
  - Make what you already have work better
  - People are the key, awareness is a powerful weapon
- Monitor & Manage your data
  - Collect logs that make sense
  - Retain information to help reconstruct events which may have occurred in the past
- Be ready to respond
  - Have a response plan
  - Identify response team in advance and set aside the resources needed
  - Periodically test response capability with simulated events

ED/PTAC Resources available

- Case Studies
  - H.S. Feedback Report
  - Head Start Program
  - FPCO Enforcement of FERPA
  - PTAC Technical Assistance
- Data Sharing
  - Data Sharing Agreement Checklist
  - Guidance for Reasonable Methods
- Data Security
  - Data Security Checklist
  - Data Governance Checklist
  - Cloud Computing
  - Identity Authentication Best Practices
  - Data Breach Response Checklist

Additional ED/PTAC Resources:

- Disclosure Avoidance FAQs
- Identification of Data Types & Uses
- De-identified Data Case Study
- FERPA 101 professional training video
- FERPA 201 (Data Sharing) professional training video
- FERPA 301 (Postsecondary) professional training video

Contact Information

Privacy Technical
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Privacy Technical Assistance Center

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