



Privacy Technical
Assistance Center

Data Security Threats: Education systems in the crosshairs

July 11, 2012
STATS-DC

Mike Tassey
Security Advisor
PTAC



Overview

- What does “threat” mean
- Who is behind all of this
- What do they want with my systems
- How can my systems be exploited
- What can we do to reduce the risk



What Does "Threat" Mean

- Threat has many definitions
- The singular truth is that “threat” requires vulnerability
- Understanding our vulnerabilities and the ways they can be exploited is the best insurance against the threat



Should We Worry?

- Data breaches, hacks, and privacy spills abound
 - Citigroup, VA, Sony, TJX, RSA, UNCC, Clarksville-Montgomery County School System...
- We face a lot of challenges
 - Applications security
 - Configuration management
 - Risk assessment
- It's all about "risk," knowing what your tolerance is
- Checkboxes don't make you secure
- It's easy to get lost between policy and execution



Who Are the "Bad Guys"

- Public Enemy #1.... It's "us"

```
root:!:0:0:/:/bin/ksh
daemon:!:1:1:/:/etc:
bin:!:2:2:/:/bin:
sys:!:3:3:/:/usr/sys:
adm:!:4:4:/:/var/adm:
uucp:!:5:5:/:/usr/lib/uucp:
guest:!:100:100:/:/home/guest:
nobody:!:4294967294:4294967294:/:
lpd:!:9:4294967294:/:
oracle:!:17:5011:Oracle Server:/opt/app/oracle/product/8.1.7:/usr/interp/bash
backup:!:60:4000:/:/usr/backup:/bin/ksh

-- 2340:Kumsup ,LindH 436,4-4353,:
insert into users (dept_phone, email, employee_type, first_name, last_name, office_building, uid, url) values ('4-4353', ' .edu', 'Graduate Assistant',
-- 2344:Luis ,VinH520,42329,612-3793237:
insert into users (dept_phone, email, employee_type, first_name, last_name, office_building, uid, url) values ('42329', ' .edu', 'Graduate Assistant',
-- 2362:Andrea ,VinH 4,5-2861,:
insert into users (dept_phone, email, employee_type, first_name, last_name, office_building, uid, url) values ('5-2861', ' .edu', 'Staff', 'Andrea',
viscXfr:!:110:4300:Visc Transfer Id:/usr/tmp:
PcapDman:!:119:4300:Printcap Generator:/usr/tmp:
SimonXfr:!:121:4300:Simon Transfer Id:/usr/tmp:
SCAdmin:!:389:4000:Service Center:/usr/lpp/scadmin:/usr/interp/bash
PHDman:!:390:4300:Handle PH Requests:/tmp:/bin/false
+:
Ima
Ma
Vid
Ne
Sh
Mo
```



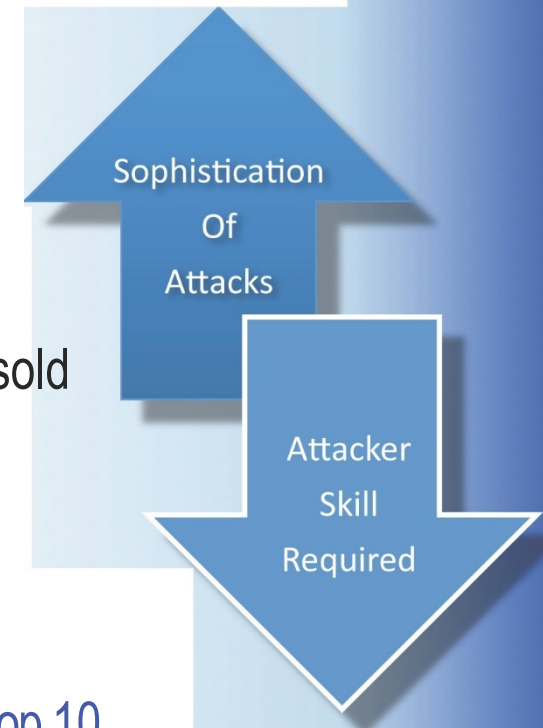
Who Are the "Bad Guys"

- Internal threats
 - Misconfiguration, complacency, lack of awareness
 - Insiders (curious, careless, or disgruntled employees)
- Criminal Threats
 - Fraudsters, identity thieves
 - Organized cyber-crime
 - Identity black market
- Hacktivist Threats
 - Cyber-activists who attack for political, egotistical, or philosophical reasons
 - Anonymous, LulzSec



It's Getting Easier for Attackers

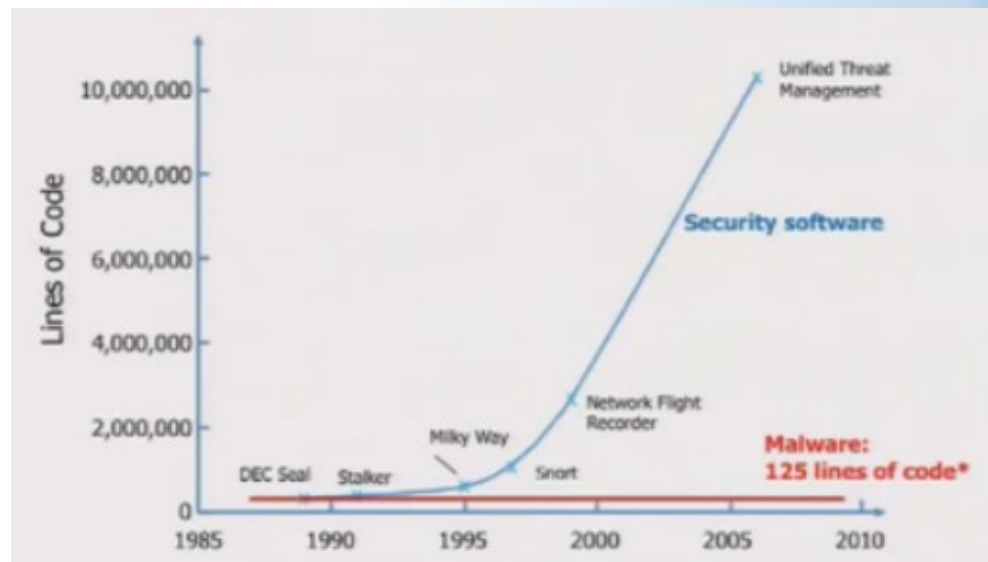
- Open source and free tools make it easier
- Free hacker training sites / forums
- Cyber-theft is commoditized
 - Black market for privacy data
 - Underground economy where tools are built and sold to order
 - 2 million new pieces of malware a year
- We are still developing flawed code
 - SQLi discovered in 1998, still in the [OWASP Top 10](#)
 - Cross-Site Scripting (XSS)
 - Session Management
 - Patching (especially 3rd party software)





Industry Effort vs. Attacker Effort

- Average 1-5 bugs for every 1,000 lines of code
- Even our security software is not immune
- Attack surface is getting bigger... not smaller
- It's not “if” an attack will happen, more like “when”
- Have a plan



Source – Pieter “Mudge” Zatkó (Black Hat 2011 keynote address)



What Do They Want?

- Identity information
 - Social Security numbers, addresses, birth dates, etc.
 - PII is used to obtain credit, purchase items, perform criminal activity
 - Thieves value children's identities, because they are "fresh"
 - Some 10% of children may already be victims
- Disruption and damage
 - Denial of Service (DoS and DDoS)
 - Defacement of web sites



The Results...

I have uk cc, aus cc and us card for sale with alots of good bin / post code Contact me if you want to buy: Uk random cc Uk random cc with dob Uk cc with post code CC uk with bin CC uk with bin+dob CC uk with bin+bank acc+sortcode+dob Now i have alot of hot bin like 552213,530127,492940,492942... I never resell cc , all dead cc will be replaced instantly I accpect : LR and WU as payment method Contact me via Yahoo m

=====> Here is the complete list of tools I'm sale and it's price.

=====LIST AND PRICE CC + CVV FOR SALE =====

* Format is always: full info

| CARD TYPE | FIRST NAME | LAST NAME | CC NUMBER | EXPIRY DATE | CVV | ADDRESS | ZIP CODE | CITY/TOWN | STATE
| COUNTRY | PHONE | DOB | SSN | MOTHER'S MAIDEN NAME | VERIFIED BY VISA | CVV2 | EMPLOYMENT | POSITION HELD |

List cc i have and frice i have :

US (Visa, master) = \$3 per 1 | (bin) = \$10 | (dob) = \$15 | (fullz) = \$25

- US (Amex,Dis) = \$5 per 1

- UK (Visa,Master) = \$6 per 1 | (bin) = \$15 | (dob) = \$20 | (fullz) = \$30

UK (Amex,Dis) = \$7 per 1



Why Me?

- Education systems are increasing in size and complexity, warehousing lots of PII
- Search engines make targets easier to find
 - Robust search engine functionality can help attackers pinpoint vulnerable systems
 - Good guys use Google too
- Mobile Users / Mobile Workforce
 - Administrators and users take their work on the go
 - Use untrusted networks
 - Lost / stolen devices or media





How Do They Do It?

- Internet-facing Applications
 - OS remote vulnerabilities are on the decrease, attackers are focusing on your applications
 - Developers still lagging in implementing secure coding practices
- Client-side Attacks
 - Phishing, click-jacking, browser exploits, plug-ins
 - Malware (spyware, adware, trojans, rootkits)
 - Mobile users (wireless, hostile networks)
- Physical threats
 - Shoulder surfing, dumpster diving, evil hardware
 - Lost or stolen hardware



How Can We Stop Them

- Nothing is 100% secure
- Create a Culture of Awareness
 - Awareness training programs
 - Leadership needs to be on board, leading the charge
- Know your systems and their vulnerabilities
 - Identify the “Crown Jewels” and protect them first
 - Ongoing assessment of security posture and risk
- View your own systems like you mean to do harm
- Standardize (technology, data, procedures)
 - Adopt common methodologies
 - Band together with partners & share threat data



How Can We Stop Them

- Mitigate the threat
 - People are the key, awareness is a powerful weapon
 - Make what you already have work better
 - Leverage technology, but don't rely on it
- Monitor & manage your data
 - Use tools to make monitoring easier
 - Collect logs that make sense
- Be ready to respond
 - Have a response plan
 - Identify the response team in advance and set aside the resources needed
 - Periodically test response capability with simulated events



PTAC Resources

- Currently Available
 - [Data Security Checklist](#)
 - [Data Governance Checklist](#)
 - [Cloud Computing FAQs](#)
 - [Authentication Best Practices](#)
 - [Data Breach Response Checklist](#)



PTAC Assistance – Site Visits

- PTAC can come to your location and provide review and advisory services
 - Review your system's plans, policy, and architecture
 - Provide data privacy and security guidance and advice
 - Provide technical security analysis to improve and fine-tune your system's security posture, implement best practices, and provide that all-important "third party perspective"
 - Create and deliver customized data privacy and security awareness training



PTAC Assistance – Rapid Response

- PTAC is ready to help in responding to privacy and security incidents
 - Provide real-world guidance and advice on response activities
 - Lend advice and help supplement technical staff in conducting investigation activities
 - Help organizational decisionmakers determine a strategy for recovery



Security Resources

- *NIST National Vulnerability Database* – <http://nvd.nist.gov/>
- *NIST Computer Security Resource Center* - <http://csrc.nist.gov/>
- *DHS United States Computer Emergency Response Team (US-CERT)* - <https://www.us-cert.gov/>
- *NIST SP800-40: Creating a Patch and Vulnerability Management Program*
<http://csrc.nist.gov/publications/nistpubs/800-40-Ver2/SP800-40v2.pdf>
- *NIST SP800-61: Computer Security Incident Handling Guide* -
<http://nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.800-61r2.pdf>
- *National Security Agency (NSA) Central Security Service: Security Configuration Guides* -
https://www.nsa.gov/ia/mitigation_guidance/security_configuration_guides/



Contact Information



Family Policy Compliance Office

Telephone: (202) 260-3887

Email: FERPA@ed.gov

FAX: (202) 260-9001

Website: familypolicy.ed.gov

Privacy Technical Assistance Center

Telephone: (855) 249-3072

Email: privacyTA@ed.gov

Fax: (855) 249-3073

Website: ptac.ed.gov