Computer Security and Data Privacy

Eric White

IFD&TC 2007

UWSC University of Wisconsin Survey Center

www.uwsc.wisc.edu ewhite@ssc.wisc.edu

Why do we care?

- Ethical Reasons
  - Honor commitment to respondents
  - Sensitive data could be used against respondents if released

What to do?

- Security = risk management
  - Risk = likelihood of a threat exploiting a vulnerability and the seriousness of a successful attack
  - All about tradeoffs

- Risk assessment
  - http://www.cramm.com/
  - http://www.cert.org/octave/
  - http://rusecure.rutgers.edu/sec_plan/risk.php

Security Models

- Data
  - CIA - Confidentiality, Integrity, Availability
  - Parkerian Hexad – Confidentiality, Possession of Control, Integrity, Authenticity, Availability, Utility

- Threat Vectors
  - TPS – Technological, Physical, Social

Escape Routes

- Tech Vector
  - Network
  - Servers & PCs
  - Mobile Devices
- Physical Vector
- Social Vector

Tech Vector – The Network

- Threats
  - Theft over the wire or air
  - Want to keep the bad guys out

- Security Measures
  - Secure communication with VPNs, SSL, WPA(2) or other encryption
  - Firewalls block traffic in and out
  - Monitor volume and type of network traffic

Tech Vector - Servers & PCs

- Threats
  - User account compromised
  - Errors in configuration exploited
  - Application flaw exploited
  - OS flaw exploited
  - Malware installed (viruses, trojans, etc.)
  - Data leakage (IM, email, etc.)
- Security Measures
  - Restrict local and remote user access
  - Software restrictions
  - Security scans (nmap, Nessus)
  - Restrict local device access
  - Patch management
  - Anti-virus and anti-spyware software
  - Principle of least privilege
  - Encryption
  - Content monitoring and filtering

Tech Vector – Mobile Devices & Media

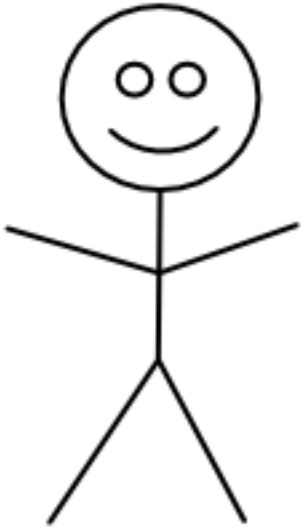
- Threats
  - Theft or loss of device
  - Theft over air or wire

- Security Measures
  - Keep private data off device
  - Encryption for data storage and communication
  - Power-on password

Physical Vector

- Threats
  - Unauthorized Access
  - Theft
- Security Measures
  - Locked and secure workspace
  - Locked server space
  - Secure storage (paper documents, laptops, etc.)
  - Security camera
  - Inventory control system
  - Key and access revocation policy

Social or Personal Vector



- Threats
  - Encryption not used
  - Secure communication channels bypassed
  - Social engineering / phishing / spam
  - Passwords exposed or unprotected
  - Malicious intent
- Security Measures
  - Clear and sensible policy
  - Principle of least privilege
  - User-friendly software and support
  - Education and training

Conclusion

- Data security is a lot of work
  - Good tools being developed
  - “Baked in” in future products
- Security = Risk Management
  - Look at the big picture
  - Make rational decisions
- Don’t underestimate the social aspect
  - Behavior ≥ technology