K-12 Information Security
The Current State

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Overview

I. Context: Technology Integration & IT Nationwide

II. Information Security in Indiana K-12 Schools: Sample Security Assessments, Surveys

III. CERIAS K-12 Outreach Efforts
I. Context: Tech Integration

- 99% of US Schools are Connected
- More Kids use Internet at School than at Home
- Educational Technology is Integrated into Standards
I. Context: Tech Integration

- 94% - High-Speed Connections
- 23% - Wireless
- 7% - Handhelds (Student)
- 8% - Laptops (Student)
- 86% - Website
I. Context: Classrooms w/Internet Access*

Source: * US DoE, 2003
1. Context: Distribution of Responsibility*

Source: * US DoE, 2003
I. Context: CIPA Controls*

- 91% - Monitoring by Teachers
- 96% - Blocking/Filtering
- 82% - Parental AUP
- 77% - Student AUP
- 52% - Monitoring Software
- 41% - Honor Code

Source: * US DoE, 2003
I. Context: Standards*

- “Social, ethical, and human issues”
  - Students understand the ethical, cultural, and societal issues related to technology.
  - Students practice responsible use of technology systems, information, and software.

Source: * ISTE NETS, 2003
II. Information Security in Indiana Schools

• Sample Security Assessment
• Surveys:
  • Technology Coordinators
  • Teachers
  • Students
II. Sample Security Assessments

**Who**: Infotex, Volunteer Indiana SCs, CERIAS, WVEC

**What**: 5 Complete Security Assessments

**Why**: Mainstream Data Sources Insufficient

**Where**: Available on CERIAS K-12 Website
II. S.A. Methodology

• External & Internal Penetration Testing Using Commonly Available Tools:
  – NMAP, Nessus, LANGuard, SuperScan, L0phtcrack

• Data Rated on Risk, Effort to Fix
II. S.A. Results

- 2 of the 5 schools easily penetrated from Internet.

- Remaining 3 had vulnerabilities that would have caused irreparable damage to systems if they were exploited & thus were not attempted.

- Easily obtained FERPA protected information from 3 of the 5 schools from the Internet, & from all schools internally.

- CIPA measures could be easily circumvented in all schools using basic tools/techniques well w/in grasp of average student.

- Payroll & grade systems were relatively easily penetrated in 4 of 5 schools, although not fully due to their sensitive nature.

- Attacks & compromises were not detected by any school IT staff w/o intentional disclosure.
II. S.A. Results: Risk Severity Distribution

- Critical: 80%
- High: 105
- Medium: 7%
- Low: 3%
II. S.A. Results: Risk Priority Distribution

Critical 36%
High 48%
Medium 9%
Low 7%
II. S.A. Overall Recommendations

General recommendations made to all five schools were relatively similar:

- Policies
- VPN for Wireless
- Patch Management
- Separate Administrative Networks
- CIPA Enforcement
- Proactive Security Controls
- Proactive Internal & External Assessments
- DMZs
II. Information Security Surveys

2002: Ethical & Safe Use: 488 Students Age 11 - 16

2003: Information Security: 43 Technology Coordinators

2003: Information Security: 68 Teachers
II. Key Findings: Middle School Survey

- 89% - Have Home Internet Access (80% Dialup)
- 31% - Have Parental Controls
- 51% - Have Formal Rules at Home
- 55% - Have Downloaded Music
- 45% - Think Downloading Music is Okay
- 33% - Have been Harassed while Online
- 56% - Have been Sent Inappropriate Material while Online
- 47% - Chat w/ Strangers
II. Key Findings: Tech Coordinator Survey

70% Have Policies in Place, but only 14% of Tech. Coordinators thought Teachers Knew Consequences

53% Thought Teachers have Violated Copyright Law

0% Thought Teachers Understood how FERPA Applies to Computer Use
II. Key Findings: Teacher Survey

19% Have Never Backed up Files
3% Use P2P Every Day
53% Could Identify a Strong Password
31% Have Never Changed their Password
96% At Least Partially Understood FERPA
69% Aware of Online Threats to Students (Exception: Harassment)
CERIAS K-12 Outreach Program

- Community Awareness
- Standards Integration
- System Security
Goal 1: Community Awareness

- Information Security Newsletters
- PTO Presentation
- Self-Instructional Document
Goal 2: Standards & Curriculum Integration

- Middle School IS Packet
- K - 12 Lesson Plans
- Teacher Workshops
Goal 3: Increase Security of K-12 Systems

- Technology Coordinator Workshops
- Multimedia Self-Instruction for Teachers
- School of Technology Service-Learning Course
For More Information

• Poster Session

• www.cerias.purdue.edu/education/k-12/