

K-12 Information Security The Current State



Matt Rose - CERIAS Outreach

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

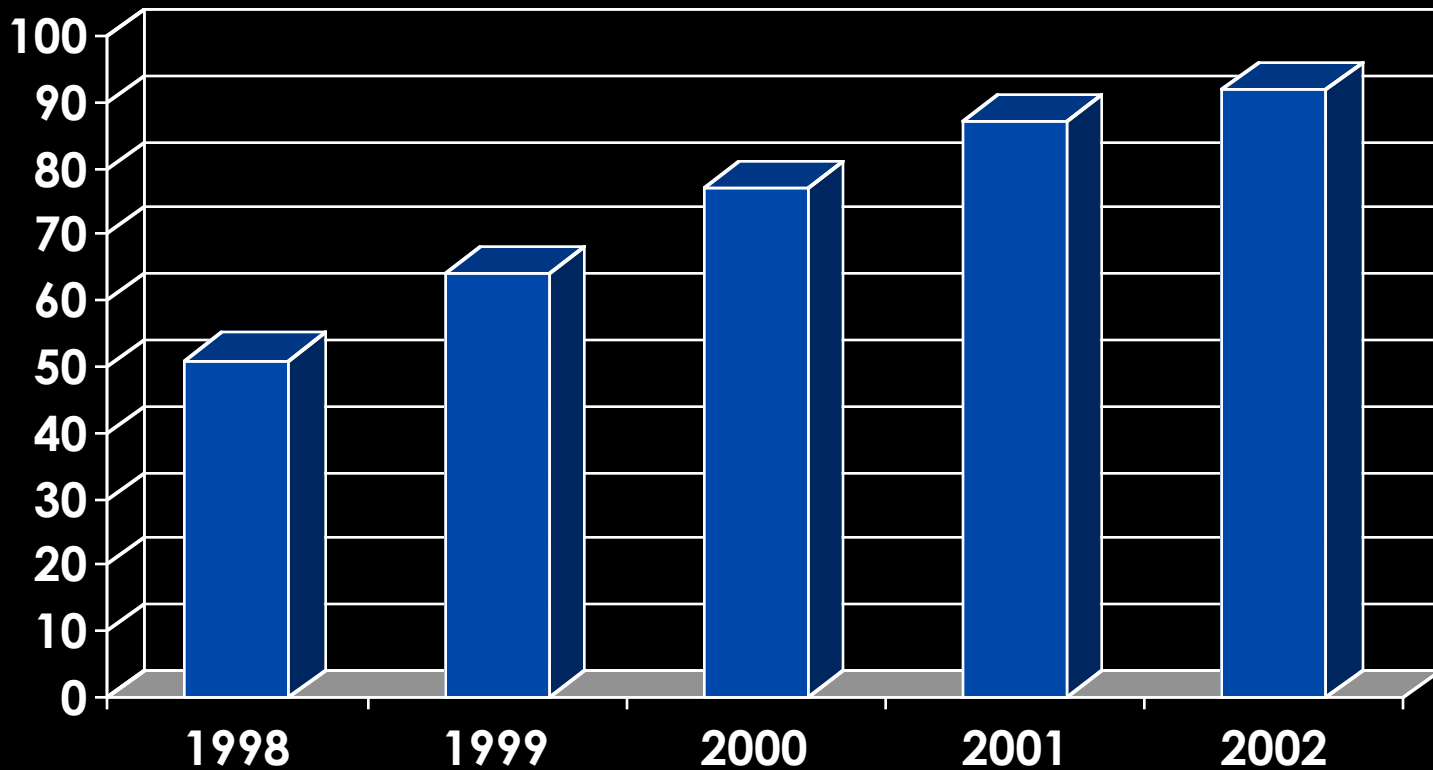
- 99% of US Schools are Connected
- More Kids use Internet at School than at Home
- Educational Technology is Integrated into Standards



I. Context: Tech Integration

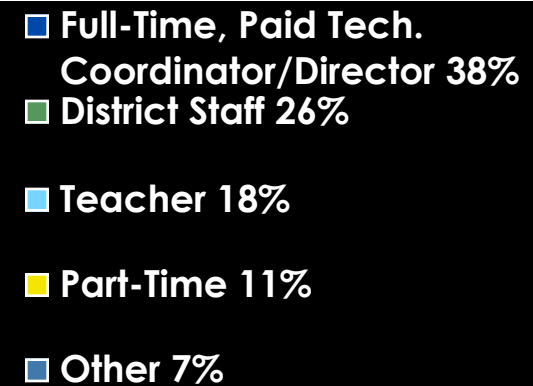
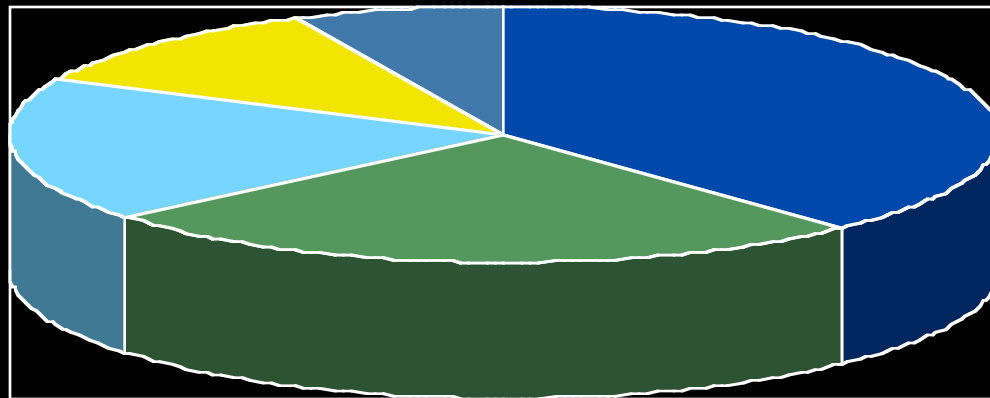
- 94% - High-Speed Connections
- 23% - Wireless
- 7% - Handhelds (Student)
- 8% - Laptops (Student)
- 86% - Website

I. Context: Classrooms w/Internet Access*



Source: * US DoE, 2003

I. 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

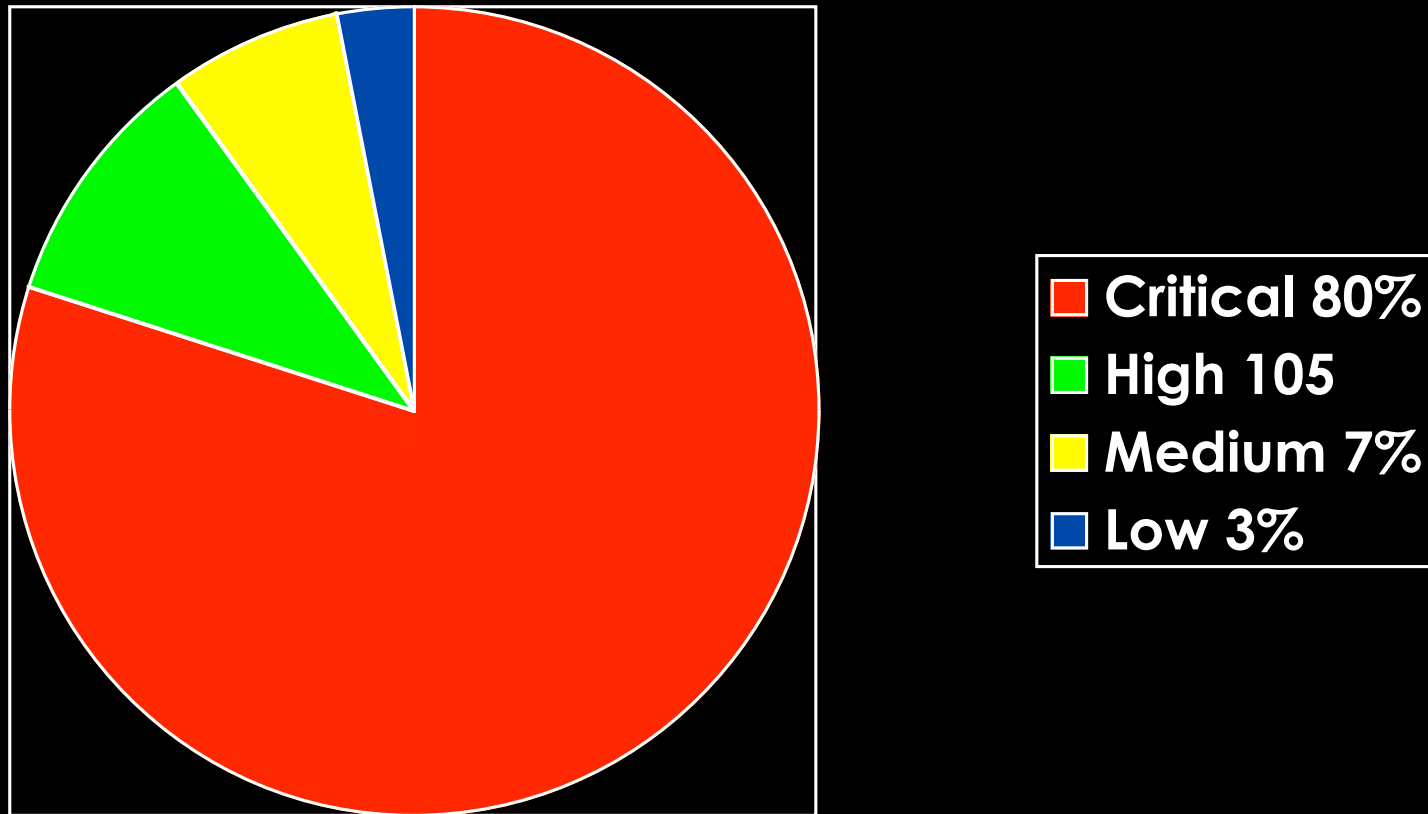
II. S.A. Methodology

- External & Internal Penetration Testing Using Commonly Available Tools:
 - NMAP, Nessus, LANGuard, SuperScan, L0phtcrack
- Data Rated on Risk, Effort to Fix

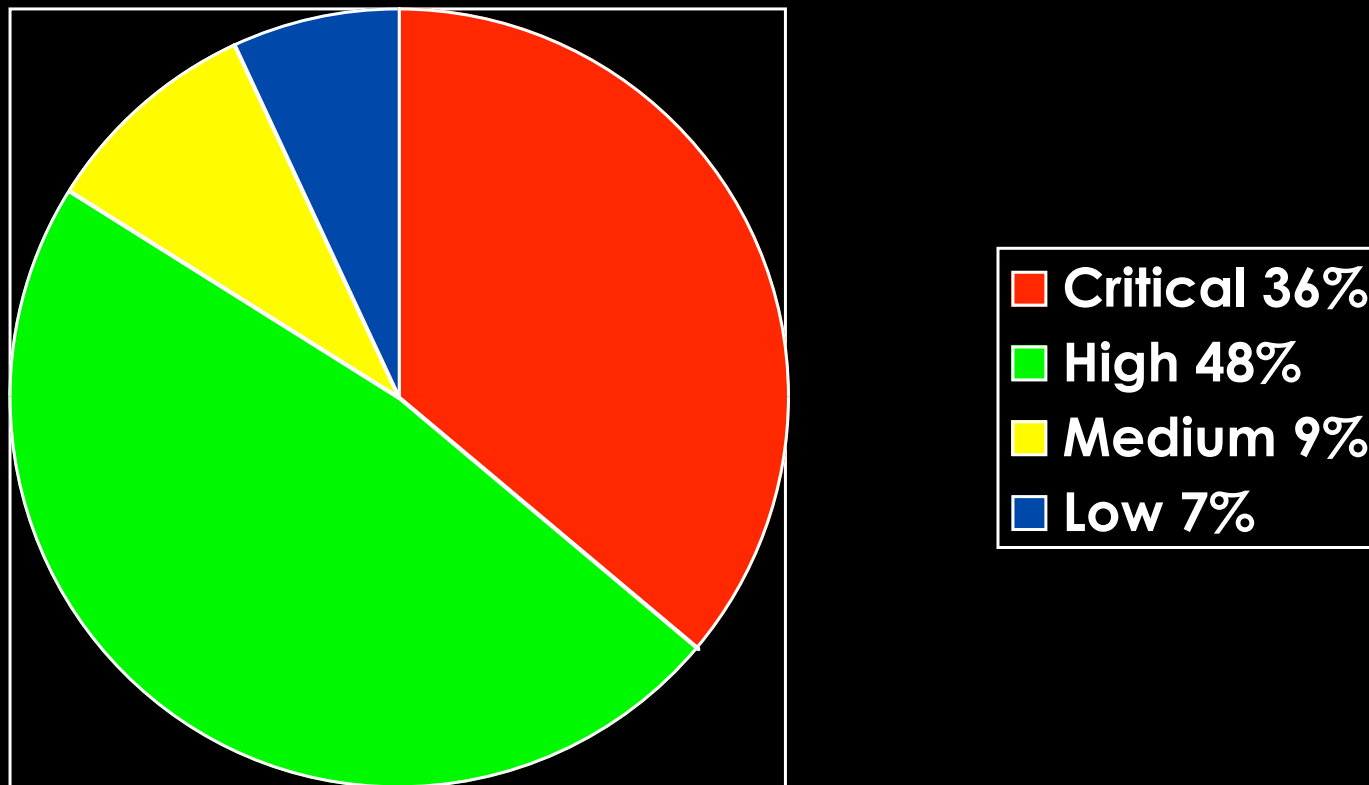
II. S.A. Results

- ✘ 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



II. S.A. Results: Risk Priority Distribution



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/