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IT201 Introduction to Information Systems

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### **Discussion: Securing Information Systems**

**Discuss how companies and organizations are securing their information systems. What tools are they using? What is the cost of securing information systems? What is the cost of not securing information systems? What are the most effective techniques of securing information systems? What are the least effective techniques of securing information systems?**

Organizations and companies today are securing their information systems using cybersecurity in layers. This combines policies, technology, and user practices to provide defense for modern systems. High vulnerabilities exist in network accessibility, software flaws, and user factors. Specifically, a defense in-depth strategy is used. Multiple controls such as security policies, identity and access, encryption, security audits, and disaster recovery are used in an overlapping fashion for strongest security coverage (Pearson Education, 2024).

- Security policies define user behavior and access rules (Pearson, slide 20).
- Identity and access management enforce the least privileged access to users (Pearson, slide 24).
- Security Audits are used to evaluate system weaknesses for proper compliance (Pearson, slide 22).

A variety of technical tools are used to support security functions:

- Firewalls to block unauthorized access to networks

- Intrusion Detection and Prevention Systems (IDS/IPS) to monitor and respond to suspicious activity (Pearson, slide 26)
- Anti malware software to remove malicious software.
- Multifactor Authentication (MFA) to strengthen authentication past passwords (Pearson, slide 24)
- Encryption to protect data in transit, using both TLS (transport layer security) and HTTPS (hypertext transfer protocol secure) (Pearson, slide 28).
- Unified Threat Management (UTM) systems integrate multiple security functions (Pearson, slide 26)

The costs of securing information systems are significant, but most companies consider it a planned investment. Globally, organizations have been estimated to have spent over \$213 billion on cybersecurity in 2025 (Gartner, Inc., 2025). Smaller businesses will have smaller budgets depending on need, so the range of specific costs of information security is vast. Now, the cost of having a breach occur is also significant. Not securing information systems can be far more severe and also unpredictable. Will there be malware that compromises your entire system? Or a phishing scam that leaks the private information of your employees? Each scenario having costs in vast ranges. According to IBM's report, the average global cost of a data breach is approximately \$4.45 million dollars, with costs in the United States exceeding \$9 million per incident (IBM Security, 2023).

The most effective techniques for securing information systems are those that use multiple layers of protection. You have human error issues that relate to security and system stability. Approaches such as multifactor authentication, least privilege access, and Zero Trust are highly effective because they limit the and contain the human factor as much as possible.

System vulnerabilities are addressed with proper patching, firewalls and system updates, which all prevent exploitation.

Least effective techniques are those that rely on outdated or single-layer defenses. Using passwords without multifactor authentication, failure to update the system consistently, and depending on a single tool to protect the system will most likely lead to exploitation of the information system.

## References

- Gartner, Inc. (2025, July 29). *Gartner forecasts worldwide end-user spending on information security to total \$213 billion in 2025*. <https://www.gartner.com/en/newsroom/press-releases/2025-07-29-gartner-forecasts-worldwide-end-user-spending-on-information-security-to-total-213-billion-us-dollars-in-2025>
- IBM Security. (2023). *Cost of a data breach report 2023*.  
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- Pearson Education. (2024). *Securing information systems (Chapter 8)* [PowerPoint slides].  
*Essentials of Management Information Systems* (15th ed.).