Computer Security Fundamentals

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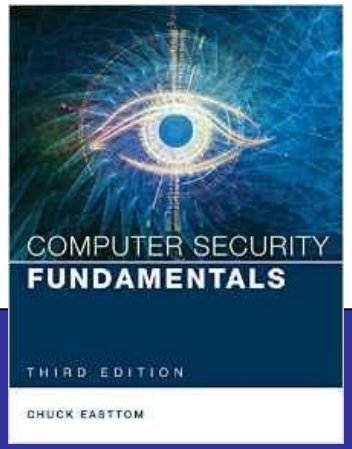

Chapter 7 Industrial Espionage in Cyberspace

Chapter 7 Objectives

- Know what is meant by industrial espionage
- Understand the low-technology methods used
- Understand how spyware is used
- Know how to protect a system

Introduction

- Espionage
  - Is NOT:
    - Sophisticated glamour
    - Exciting adventure
  - Its ultimate goal:
    - Collecting information
    - Without fanfare
    - Without knowledge of target

Introduction (cont.)

- Espionage
  - NOT done only by governments and terrorists
    - Spies for political and military goals
  - Also done by private companies
    - Industrial espionage.
    - Billions of dollars.
    - Companies fear to reveal they are targets.

What Is Industrial Espionage?

- Industrial Espionage
  - Spying to find out valuable information:
    - Competitor's projects, client list, research data
  - While the goal is different than military espionage, the means are the same:
    - Electronic monitoring, photocopying files

Types of industrial espionage

IP theft

Property trespass

Hiring away employees

Wiretapping or eavesdropping

Cyber attacks and malware

IP theft

This type of espionage comes in many different forms. For example, it can be a theft of engineering designs from an automobile or aerospace company; a formula for a new drug from a pharmaceutical company; a recipe from a food and beverage or vitamin supplement company; new robotic manufacturing processes from a high-tech manufacturer; or even pricing sheets and customer lists. These items may be stolen by outsider perpetrators or foreign governments, or by employee insiders who are disgruntled or see a way to get hired or compensated by a competitor for the theft.

- KFC
- Pepsi

Property trespass

Breaking into physical premises or files to obtain company information is another form of industrial espionage. A surprising number of critical corporate assets are still in physical form and may be obtained by insider employees or by outsiders who gain access to the premises.

Hiring away employees

Competitors frequently try to hire away employees from companies to gain access to information the employees have acquired on the job. Most of the time, the knowledge employees obtain on the job is part of the trade and is legitimately transferrable, but there also are times when employees leave with valuable trade secrets and formulas in their heads that they can put to work for their new companies.

Wiretapping or eavesdropping on a competitor

Those desiring information from a company can set up portable devices that listen in or record certain conversations, such as a confidential board meeting. In some cases, this wiretapping may be legal and authorized, but in others, it is illegal listening for the purpose of economic or strategic gain.

- PM Security

Cyber attacks and malware

Whether it is through a distributed denial-of-service attack or an infusion of malware that corrupts a company's network, companies, governments and organizations also seek to disrupt each other by sabotaging daily operations and disabling their ability to work.

Information as an Asset

- Information can be a real asset.
- Billions are spent on research and development.
- How to value your information:
  - VI = C + VG

Information as an Asset (cont.)

- Information is as much an asset as anything else.
- Worth more than the hardware and software that houses it.
- Much more difficult to replace.
- Information-based economy
- Medical equipment
- College degree

Information as an Asset (cont.)

- Data has value for two reasons:
  - Time and effort spent to create and analyze it.
  - Data often has intrinsic value.

How Does Espionage Occur?

- Espionage can occur in two ways
  - Easy low-tech way
    - Employees simply take the data.
    - Social engineering.
  - Technology-oriented method
    - Spyware
      - Cookies and key loggers

How Does Espionage Occur? (cont.)

- Espionage can occur in two ways:
  - Easy low-tech way
    - Employees divulge sensitive data.
    - Disgruntled employees.
    - Motives vary.

How Does Espionage Occur? (cont.)

- Espionage can occur in two ways:
  - Easy low-tech way
    - Information is portable.
      - CDs, flash drives
    - Social engineering.
    - E-mail.

How Does Espionage Occur? (cont.)

- Espionage can occur in two ways
  - Technology-oriented method.
  - Any monitoring software can be used.
    - Spyware
    - Keystroke loggers
    - Capturing screenshots

Protecting Against Industrial Espionage

- Cannot make system totally secure
  - Employ antispyware software.
  - Use firewalls and intrusion-detection systems.
  - Implement security policies.
  - Encrypt all transmissions.

Protecting Against Industrial Espionage (cont.)

- How to lessen risk of internal espionage
  - Give out data on a “need-to-know” basis.
  - Ensure no one person has control over all critical data at one time.
  - Limit portable storage media and cell phones.

Protecting Against Industrial Espionage (cont.)

- How to lessen risk of internal espionage:
  - No documents/media leave the building.
  - Do employee background checks.
  - Scan PCs of departing employees.
  - Lock up tape backups, documents, and other media.
  - Encrypt hard drives of portable computers.

Protecting Against Industrial Espionage (cont.)

- **Carefully screen new hires**
- **Monitor employee activities**
- **Secure physical premises and assets.**
- **Secure digital assets**
- **Fully patent company designs, inventions and discoveries**
- **Audit your security regularly**

Protecting Against Industrial Espionage (cont.)

- How to lessen risks of internal espionage
  - Encryption software
    - www.navastream.com
    - www.secure-messaging.com/products/cgfolder/index.htm
    - www.smart-cardsys.com/security/

Real-World Examples of Industrial Espionage

- Professor Hao Zhang
  - Stealing trade secrets from universities
  - Giving secrets to Chinese government

Real-World Examples of Industrial Espionage (cont.)

- Houston Astros
  - Team and scouting information
  - Allegedly stolen by competitor

Real-World Examples of Industrial Espionage (cont.)

- General Motors
  - GM alleges that eight former employees transferred proprietary information to Volkswagen.
  - GM sued in criminal court under RICO.
  - GM sued in civil court for damages.
  - Industrial espionage not restricted to technology companies.

Real-World Examples of Industrial Espionage (cont.)

- Interactive Television Technologies, Inc.
  - A break-in resulted in theft of data.
    - Years of research and substantial financial investment
  - Other companies shortly came out with competing products.

Real-World Examples of Industrial Espionage (cont.)

- Bloomberg, Inc.
  - BI provided services to a Kazakhstan. company; gave them software needed to use BI's services.
  - A KS employee, Oleg Zezev, illegally entered BI's computer system.
  - He sent an e-mail to Michael Bloomberg threatening extortion.

Real-World Examples of Industrial Espionage (cont.)

- Avant Software
  - Charged with attempting to steal secrets from a competitor.
  - A former consultant for Avant took a job with Cadence.
  - There were allegations on both sides.

Industrial Espionage and You

- Most companies decline to discuss the issue.
- Larry Ellison, CEO of Oracle Corporation, has openly defended his hiring of a private detective to dumpster-dive at Microsoft.

Summary

- Industrial espionage exists and will grow into an even larger problem.
- There are a variety of methods by which espionage can take place.
- An employee revealing information is the most common.
- Compromising information systems is an increasingly popular method of espionage.