Physical Security

- Chapter 15

Learning Objectives

- Understand the importance of physical security
- Discuss the impact of location on a facility's security
- Identify major material factors when constructing a facility
- Understand how various physical barriers can enhance protection of vital resources

continued…

Learning Objectives

- Discuss the various biometric techniques used for access control
- Understand the importance of fire safety and fire detection

FOR3S3C

Physical Controls

- When managing a network environment, it is critical to secure:
  - Equipment
  - Data
  - Power supplies
  - Wiring
  - Personnel with access to the location

FOR3S3C

Location and Environment Considerations

- Visibility
- Accessibility
- Propensity for environmental problems

Construction

- Wall materials
  - Fire rating, how well reinforced
- Security of doors
- Ceilings
  - Combustibility, load and weight bearing ratings
- Windows
  - Shatterproof, wired for alarms

continued…

Construction

- Location of shutoff valves for water and gas lines
- Location of fire detection and suppression devices

Physical Barriers

- Address perimeter security
- Types of physical barriers
  - Locks
  - Fencing
  - Lighting

FOR3S3C

Types of Locks

- Preset locks
- Cipher locks
- Biometric locks
- Multicriteria locks
- Device locks

FΩR3S3C

Preset Locks

- Typical locks that utilize a physical lock and key
- Least secure

Figure 15-1 Preset lock

Cipher Locks

- Programmable locks that utilize a keypad for entering a PIN or password
- More expensive than preset locks
- Offer more security and flexibility
- Cipher lock options
  - Door delay
  - Key override
  - Master keyring
  - Hostage alarm

Cipher Locks

Figure 15-2 Cipher lock keypad

Cipher Locks

Figure 15-3 Cipher lock card reader

Biometric Locks

- Verify user's identity by a unique personal characteristic
- Complex, expensive, and secure

FΩR3S3C

Multicriteria Locks

- Combine strengths of other lock types
- As complexity increases, so does cost and security

FΩR3S3C

Device Locks

- Secure computer hardware and network devices
- Types
  - Cable lock (best known)
  - Switch controls
  - Slot locks
  - Port controls
  - Cable traps

FΩR3S3C

Cable Locks

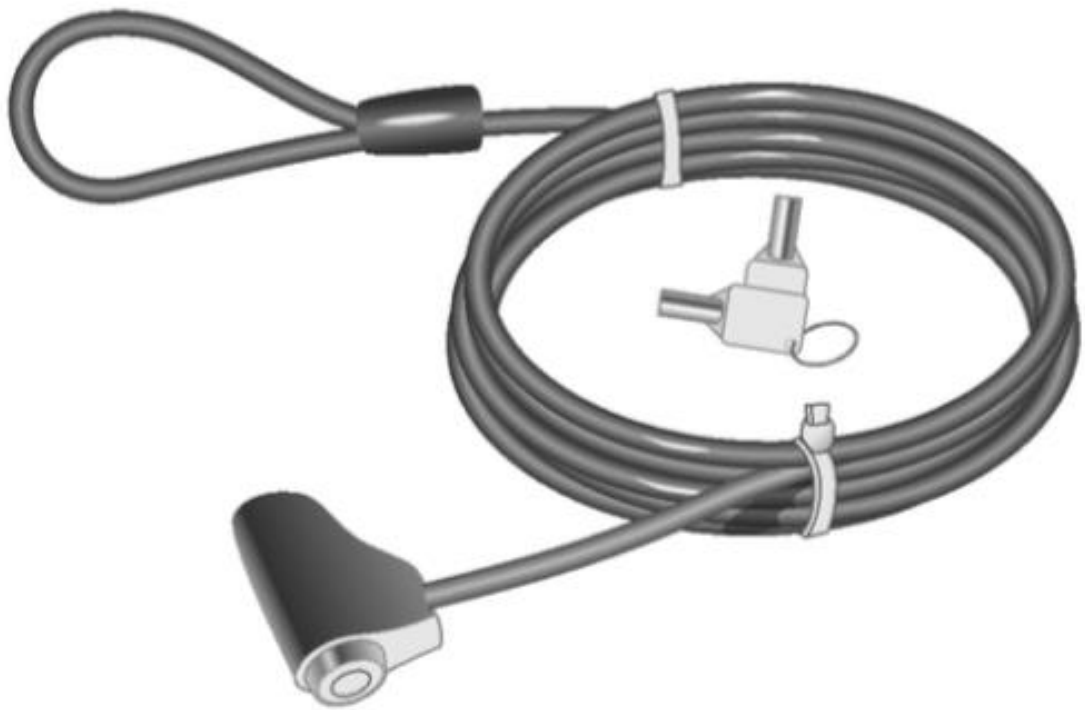

Figure 15-4 Cable lock

Fencing

- Controls access to entrances
- Cost is directly related to:
  - Height
  - Quality of material
  - How well installed

FOR3S3C

Lighting

- Deters intruders
- Provides safe environment for personnel

Physical Surveillance

- Security guards
- Guard dogs

FΩR3S3C

Technical Controls

- Personnel access controls
- Surveillance
- Ventilation
- Power supply
- Fire detection and suppression

FOR3S3C

Personnel Access Controls

- Password or personal identification numbers
- Identification cards or wireless proximity readers
- Biometric systems
- Common security breaches
  - Social engineering attack
  - Piggybacking

FΩR3S3C

Identification Cards

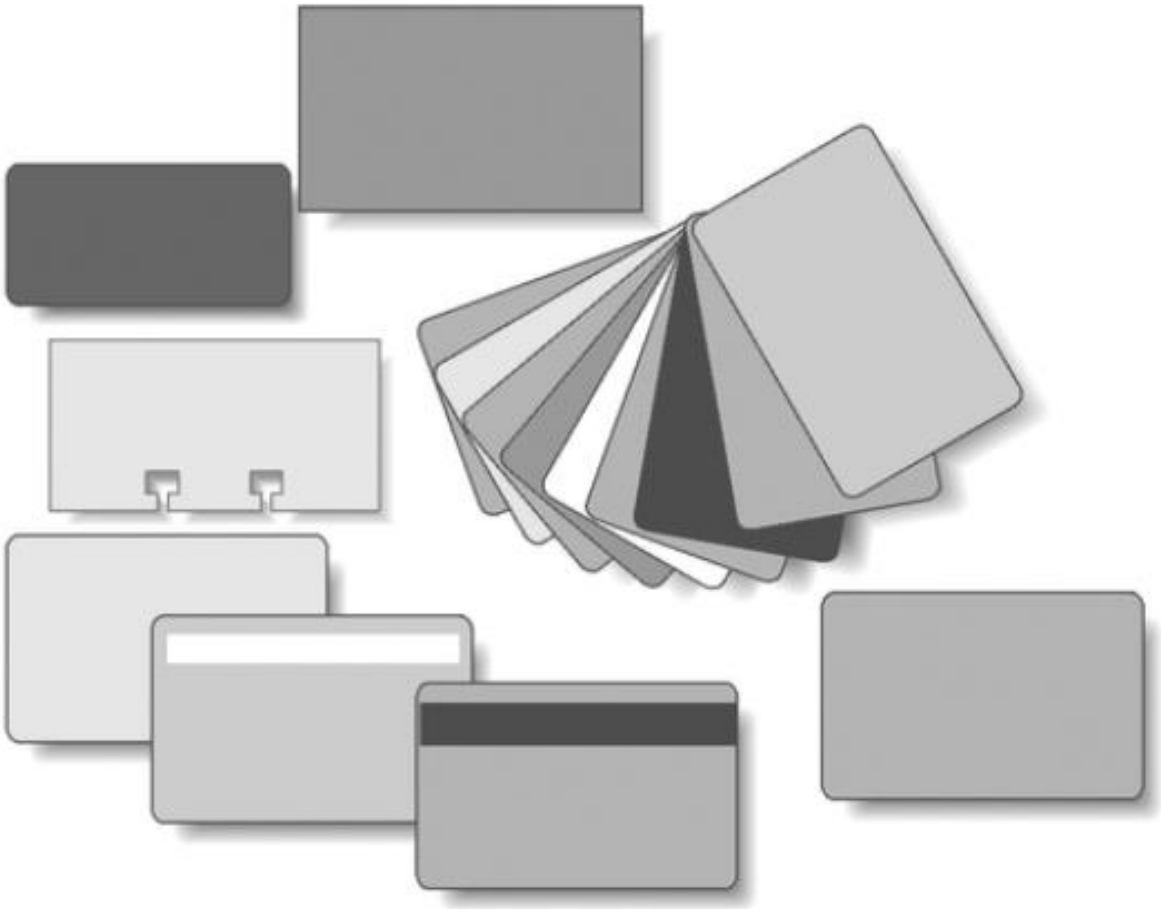

Figure 15-5 Identification cards

Biometric Systems

- Scan personal characteristics of a user and compare it to previous record created when user was added to the system

FΩR3S3C

Types of Biometrics Systems

- Fingerprints
- Palm prints
- Hand geometry
- Eye scans
- Signature dynamics
- Voiceprints

FOR3S3C

Technical Surveillance

- Closed-circuit television cameras
  - Can be monitored at a central location
  - Record all activity that takes place within critical areas
  - Allow security personnel to assess whether or not an area is being compromised

FΩR3S3C

Ventilation

- Maintain air quality with a closed-loop recirculating air-conditioning system
- Control contamination from dust and other pollutants with positive pressurization and ventilation

FΩR3S3C

Power Supply

- Main methods to protect against power failure
  - Uninterruptible power supply (UPS)
  - Backup sources

Protecting Computing Facilities from Power Issues

- Use surge protectors to protect from voltage fluctuation
- Follow proper shutdown and power-up procedures to ensure that devices are not damaged
- Shield long cable runs to help control impacts of electromagnetic interference

continued…

Protecting Computing Facilities from Power Issues

- Avoid fluorescent lighting
- Properly ground all equipment and racks
- Do not daisy chain power strips and extension cords together to create longer extension cords

FΩR3S3C

Fire Suppression

- Select fire suppression materials carefully
- Forms of fire detection response systems
  - Manual fire alarm pull-down devices
  - Automatic sensors

Figure 15-6 Fire alarm pull box

Fire Detection Response Systems

- Usually used in tandem with automatic fire suppression system that uses:
  - Halon gas
  - Carbon dioxide
  - Water
  - Soda acid

FΩR3S3C

Fire Prevention Solutions

Table 15-1 Fire Prevention Solutions

Type of Fire	Elements of Fire	Suppression Method
Common combustibles	Wood, paper, etc.	Water or soda acid
Liquid	Petroleum products and coolants	Halon (or replacement) gas, carbon dioxide, or soda acid
Electrical	Electrical equipment and wiring	Halon (or replacement) gas or carbon dioxide

FΩR3S3C

Natural Disasters

- Floods
- Lightening
- Earthquakes

Chapter Summary

- Physical security
  - Physical controls
    - Location
    - Construction
    - Physical barriers
  - Technical controls
    - Personnel access controls
    - Surveillance
    - Ventilation

FΩR3S3C