

Cyber Security

Cyber Security

- **Cyber Security** is the protection of computer systems and networks from the theft of or damage to their hardware, software, or electronic data, as well as from the disruption or misdirection of the services they provide.

Information Security vs Cyber Security

- Cyber Security is about the ability to protect the data in cyberspace from cyber attacks.
- Information Security is all about protecting information from unauthorized user, access and data modification or removal in order to provide confidentiality, integrity, and availability, ie, deals with the security of data in general.



Threat

- **Threats** are dangerous actions that can breach security and cause harm.
- A threat is an unwanted (natural/deliberate/accidental) **event** that may result in harm to an asset.
- Examples : Hijacking, blackmail, unauthorized access to information and modification or destruction.

Vulnerabilities

- **Vulnerabilities** are weaknesses in systems that allow a threat to become effective.

Examples : Missing patches, Weak or default passwords, Misconfiguration

- Vulnerabilities may result from bugs or design flaws in the system.

Examples : Data validation, Buffer overflows etc.

Attacks

- **Passive Attack** is one in which the intruder eavesdrops but does not modify the message stream in any way.
- **Active attack** is one in which the intruder may transmit messages, replay old messages, modify messages in transit, or delete selected messages from the wire.
- **Eavesdropping** means Secretly gaining unauthorized access to confidential information.
- An **intruder** is an attacker that gains, or tries to gain, unauthorized access to a system.

Risk

- **Computer Security Risks** is any event or action that could cause a loss of or damage to computer hardware, software, data, information, or processing capability.
- A **computer security risk** is anything that may cause damage to the confidentiality, integrity, or availability of your data

Controls

- **Security Controls are the countermeasures which are used to avoid, detect or minimize the security risks to any kind of information, computer systems etc.**
- Controls mainly helps to
 - Reduce the risk of damage
 - Reduce the loss by deterring it
 - Slow down an attack against an asset

Cyber Security

- Protect against
 - Unauthorized Access
 - Unauthorized Modification
 - Unauthorized Deletion

Basic Components of Info.security

CIA Triad

➤ Confidentiality

- Keeping data and resources hidden

➤ Integrity

- Data integrity (integrity)
- Origin integrity (authentication)

➤ Availability

- Enabling access to data and resources

Confidentiality

Confidentiality: Who is authorized to use data?

Eavesdropping, Snooping



A passive attack threatens the confidentiality of data being transmitted.

Integrity: Is data “good?”

Virus, Malicious Intrusions



Availability: Can access data whenever need it?

DOS (Denial of service)

An active attack threatens the integrity or availability of data being transmitted.

Confidentiality Threats

- Sniffing

It is a process of monitoring and capturing all data packets passing through given network

- Spyware

Program that is installed on a computer connected to the internet without the knowledge of the user and that gathers information about the user and forward it to a third-party without your consent.

- Some measures to keep your information confidential are:
 - Encryption
 - Password
 - Two-factor authentication
 - Bio-metric

Integrity

Integrity: Is data “good?”

Integrity means maintaining and assuring the accuracy and completeness of data over its entire lifecycle, cannot be modified in an unauthorized or undetected manner.



Virus, Malicious Intrusions

Integrity

Integrity protection protects not only data, but also operating systems, applications and hardware from being altered by unauthorized individuals.

- Measures to maintain the integrity of information include:
 - Encryption
 - User Access Controls
 - Version Control Hash verifications and digital signatures
 - Backups

Availability

Availability: Can access data whenever need it?

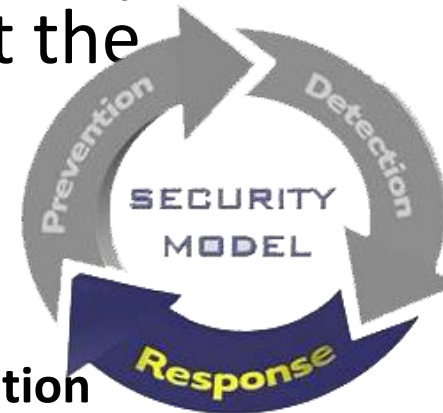
DOS (Denial of service),
Worms

Goals of Information Security

The **aim of information security** is to develop and maintain a security plan to protect the information.

The three main aspects or goals are:

- **Prevention**
 - **Prevention** refers to **preventing computer or information violations** from occurring, it is much easier to deal with violations before they occur than after.
- **Detection**
 - **Detection** refers to **identifying events** when they occur.
 - The detection process may involve a variety of complicated tools or a simple examination of the **system log files**.
- **Response or re-action**
 - **Response** refers to developing strategies and techniques to deal with an attack or loss.



Threats to Information Security

- **Malware**
- **Phishing**
- **Password Attacks**
- **Denial-of-Service**

Threats to Information Security

Malware:

- Hostile, intrusive, or annoying software or program code ("malicious" + "software")
- Includes computer viruses, worms, trojan horses, bots, spyware, adware, etc
- Software is considered malware based on the intent of the creator rather than any particular features

Threats to Information Security

Virus

A computer virus is a type of malware that propagates by inserting a copy of itself into and becoming part of another program

Worms

Computer worms are similar to viruses, but standalone software which do not require a host program or human help to propagate

Ransomware

Ransomware is a type of malicious software that threatens to publish the victim's data or perpetually block access to it unless a ransom is paid

Threats to Information Security

Trojans

A Trojan is a harmful piece of software that looks legitimate.

After it is activated, it can achieve any number of attacks on the host,

Internet bot:

- also known as **web robots**, are automated internet applications controlled by software agents
- These bots interact with network services intended for people, carrying out monotonous tasks and behaving in a humanlike manner (i.e., computer game bot)
- Bots can gather information, reply to queries, provide entertainment, and serve commercial purposes.
- Botnet - a network of "zombie" computers used to do automated tasks such as spamming or reversing spamming

Threats to Information Security

Adware:

- **Advertising-supported software** is any software package which automatically plays, displays, or downloads advertising material to a computer after the software is installed on it or while the application is being used.
- Adware is software integrated into or bundled with a program, typically as a way to recover programming development costs through advertising income

Spyware:

- A broad category of software designed to intercept or take partial control of a computer's operation without the informed consent of that machine's owner or legitimate user
- In simpler terms, spyware is a type of program that watches what users do with their computer and then sends that information over the internet
- Spyware can collect many different types of information about a user:
 - Records the types of websites a user visits
 - Records what is typed by the user to intercept passwords or credit card numbers
 - Used to launch “pop up” advertisements
- Many legitimate companies incorporate forms of spyware into their software for purposes of advertisement(Adware)

Threats to Information Security

- **Phishing** –

- attempts to extract personal information by masking intentions and making the request or website look official.
 - It might be phone company asking for updated information;
 - It is possible only with correct training of staff internally.

- **Password Attacks** –

- Cyber criminals run a program that tries multiple passwords in order to gain access to your data.

Brute force attacks or combination attacks will crack unsecure passwords.

- **Denial-of-Service** – A website is flooded with requests or data until the system crashes.

- The cyber-criminal will often use a host of personal computers to carry out the attack.
- The other computers may belong to individuals who have no idea their machine is being used in the attack.
- These security breaches will usually only affect big companies.



Email

Stay logged in ☒

Password

Forgot your password?

Enter



Connect with your friends faster, wherever you are.

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