

Common Causes

Data Security Breaches

Data Security Breach Definition

- “A data breach is a confirmed incident in which sensitive, confidential or otherwise protected data has been accessed and/or disclosed in an unauthorized fashion.”
 - <https://searchsecurity.techtarget.com/definition/data-breach>
- Common data breach exposures include personal information, such as credit card numbers, Social Security numbers and healthcare histories, as well as corporate information, such as customer lists, manufacturing processes and software source code

Common Causes of Data security breaches

Reasons why Data Security Breaches Take place (non exhaustive):

- Loss or theft of data or equipment on which data is stored
 - Poorly coded \unpatched Applications \ Operating systems
 - Inappropriate access controls \ Misconfiguration
 - Equipment failure
 - Human error \ Weak or stolen passwords
 - Unforeseen circumstances such as a natural disaster
 - Environmental issues (humidity, overheating of equipment)
 - Hacking attack
 - Social Engineering
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- Watch this clip on the leading cause of cyber-attacks in business.

<https://www.youtube.com/watch?v=M7q6EH7u8gk>

Common Causes of Data security breaches

Weak and stolen passwords: Weak passwords are often a source of a data breach. An opportunist hacker may guess a password to a system, or the user has left clues about their password in a security question that leads the hacker to the password. Sometimes a password is a simple word from the dictionary that a hacker can do a dictionary attack or a brute force attack and gain access to an account.

Have a look and see if your password is on this most common password list

<https://www.passwordrandom.com/most-popular-passwords>

Environmental Issues

- Humidity levels (the amount of water vapour present in air) should be constantly monitored to mitigate potential damage to systems
- In a data centre or computer room, maintaining ambient relative humidity levels **between 45% and 55%** is recommended for optimal performance and reliability. When relative humidity levels are too high, water condensation can occur which results in hardware corrosion and early system and component failure.

Denial of Service (DoS)

- In computing, a denial-of-service attack (DoS attack) is a cyber-attack in which the perpetrator seeks to make a machine or network resource unavailable to its intended users by temporarily or indefinitely disrupting services of a host connected to the Internet.
- A Denial of service is typically accomplished by flooding the targeted machine or resource with superfluous requests in an attempt to overload systems and prevent some or all legitimate requests from being fulfilled

Exercises

- Use the filter function on the website linked below to find the following information:
- <https://informationisbeautiful.net/visualizations/worlds-biggest-data-breaches-hacks/>
 1. The biggest breach in the Financial sector (in terms of records) in 2019
 2. Which company had the most records compromised (in terms of records) due to poor security
 3. Using the sensitivity function, how many organisations are red (serious breach)

Common Causes of Data security breaches

Data packets travel to and from numbered network ports associated with IP addresses and endpoints, using the TCP layer protocols. All ports are potentially at risk of attack. If a port is not configured properly, a hacker can gain access to a server that can contain valuable data. Any device and the associated user on that network is then at risk. There is 65,535 TCP ports; some of the more common ones are below.

Port Number	Port use
21 the	Connects FTP (File Transfer Protocol) servers to internet
110	POP3 (Post Office Protocol version 3) - used for retrieving E-mails
80	HTTP traffic. Unencrypted web traffic
25	SMTP (Simple Mail Transport Protocol) - used for e-mail routing between mail servers

https://en.wikipedia.org/wiki/List_of_TCP_and_UDP_port_numbers

Video: Password solution



- **Simple solution:** Use a password manager or use complex passwords, and never share passwords, as this video show:
- https://www.youtube.com/watch?v=UzvPP6_LRHc