enisa

EUROPEAN
UNION AGENCY
FOR CYBERSECURITY

From January 2019 to April 2020

Insider threat

ENISA Threat Landscape

Overview

An insider threat is an action that may result in an incident, performed by someone or a group of people affiliated with or working for the potential victim. There are several patterns associated with threats from the inside. A well-known insider threat pattern (also known as 'privilege misuse') occurs when outsiders collaborate with internal actors to gain unapproved access to assets. Insiders may cause harm unintentionally through carelessness or because of a lack of knowledge. Since these insiders often enjoy trust and privileges, as well as knowledge of the organisational policies, processes and procedures of the organisation, it is difficult to distinguish between legitimate, malicious and erroneous access to applications, data and systems.[1]

The five types of insider threat can be defined according to their rationales and objectives:

a) the careless workers who mishandle data, break use policies and install unauthorised applications;

b) the inside agents who steal information on behalf of outsiders;

c) the disgruntled employees who seek to harm their organisation;

d) the malicious insiders who use existing privileges to steal information for personal gain;

e) the feckless third-parties who compromise security through intelligence, misuse or malicious access to or use of an asset.

All five types of insider threats should be continuously studied, as acknowledging their existence and their modus operandi should define the organisation's strategy for security and data protection.

__Findings

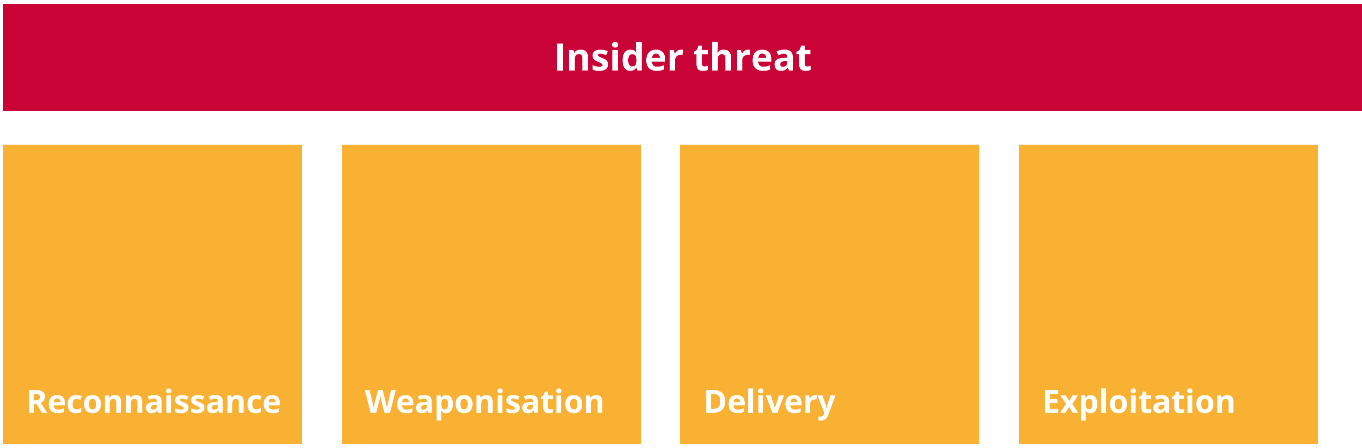
65%_ of the impact from insider threats includes damage to the organisation’s reputation and finances[12]

88%_ of the organisations surveyed recognise that insider threats are a cause for alarm[10]

€11,45_ million is the average annual cost of cybersecurity incidents caused by an insider to the organisation[8]

40%_ of the organisations surveyed feel vulnerable to having confidential business information exposed[11]

Kill chain



Insider threat

Reconnaissance

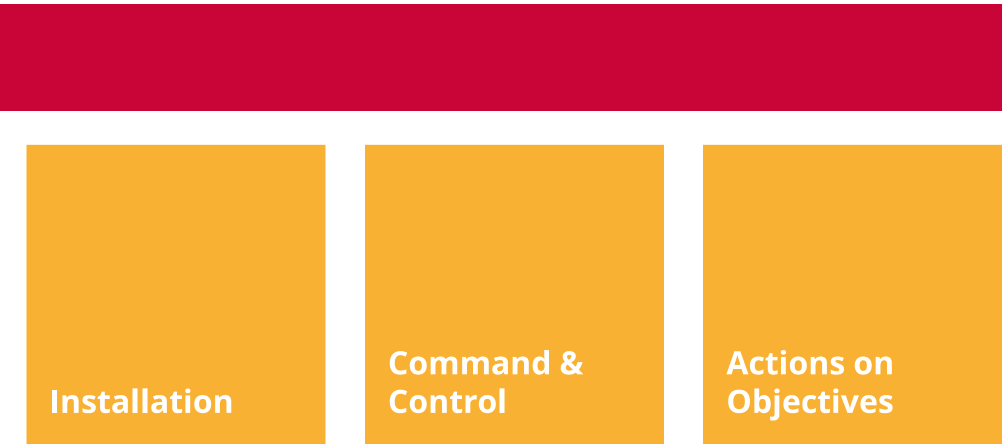
Weaponisation

Delivery

Exploitation

🟥 *Step of Attack Workflow*

🟧 *Width of Purpose*



Installation

Command & Control

Actions on Objectives

The Cyber Kill Chain® framework was developed by Lockheed Martin, adapted from a military concept related with the structure of an attack. To study a particular attack vector, use this kill-chain diagram to map each step of the process and reference the tools, techniques and procedures used by the attacker.

MORE INFORMATION

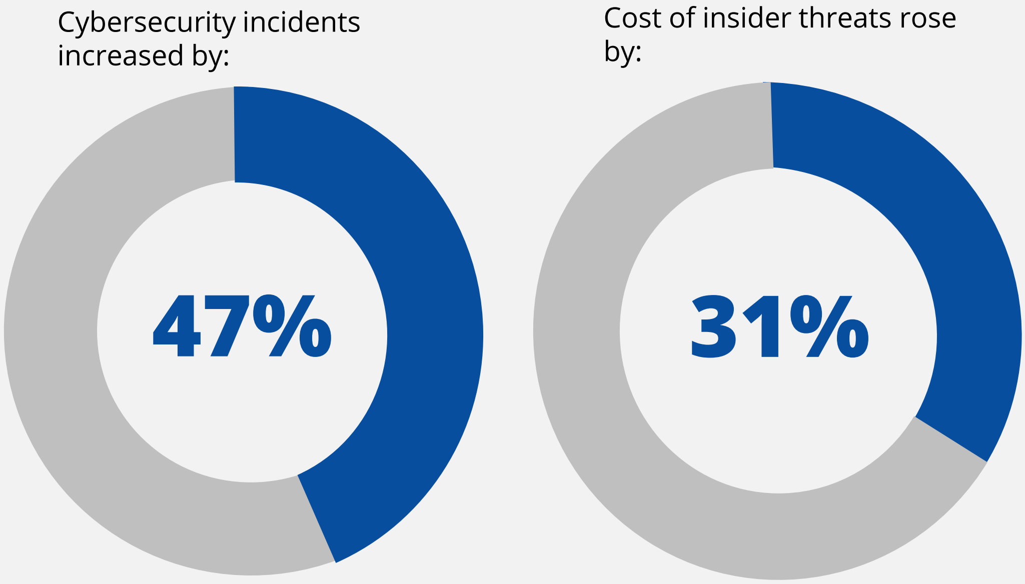
Description

_Money rules

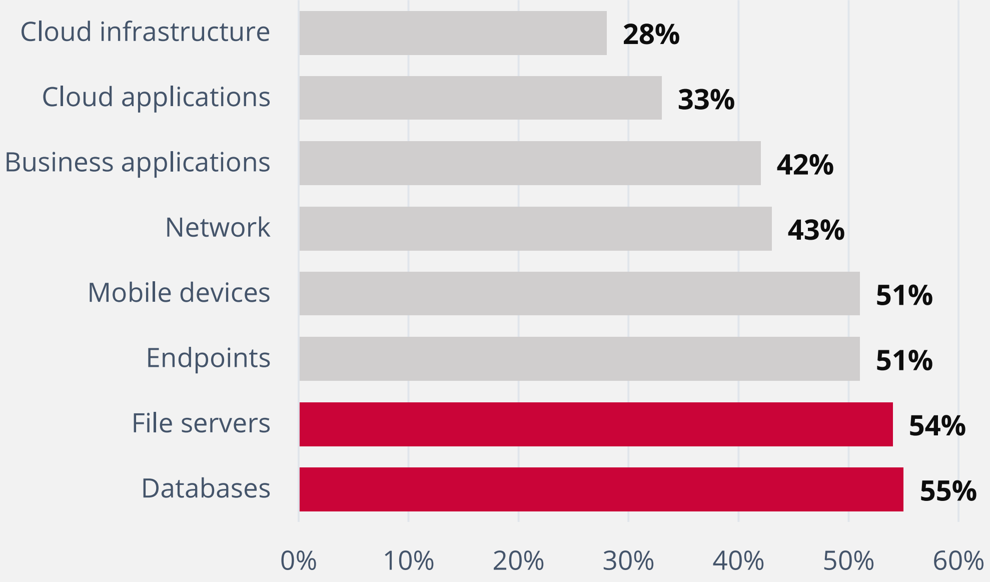
Due to the increasing cost of other attack vectors, attackers are willing to offer large amounts of money to insiders. The price of insiders varies, depending on the insider's position in the company, the company itself, the type and complexity of service that is requested, the type of data that are exfiltrated and the level of security at the company. Some of the ways attackers recruit insiders include: (1) simply posting an offer on forums and offering a reward for certain information; (2) disguising their actions so that employees don't realize they are acting illegally, disclosing personal information or engaging in insider activity; and (3) blackmailing.[4]

_Rogue actions Urbi et Orbi

A former software engineer from a cloud service provider took advantage of a misconfigured web application firewall and accessed more than 100 million customers' accounts and credit card records. The company has since fixed the vulnerability and stated that 'no credit card account numbers or log-in credentials were compromised'. This insider-threat case is particularly interesting because the former employee turned hacker wasn't worried about hiding the identity. The hacker shared the hacking method with colleagues from Capital One on a chat service. The hacker also posted the information on GitHub (using the full name) and bragged on social media about it too. This kind of behaviour is a phenomenon psychologist's call 'leakage' whereby insiders who plot to do damage reveal their plans. Capital One expects the breach to cost up to US $150 million (ca. €127 million).[5]



Incidents and cost trends. Source: ObserveIT[8]



IT assets vulnerable to insider threats. Source: Help Systems[9]

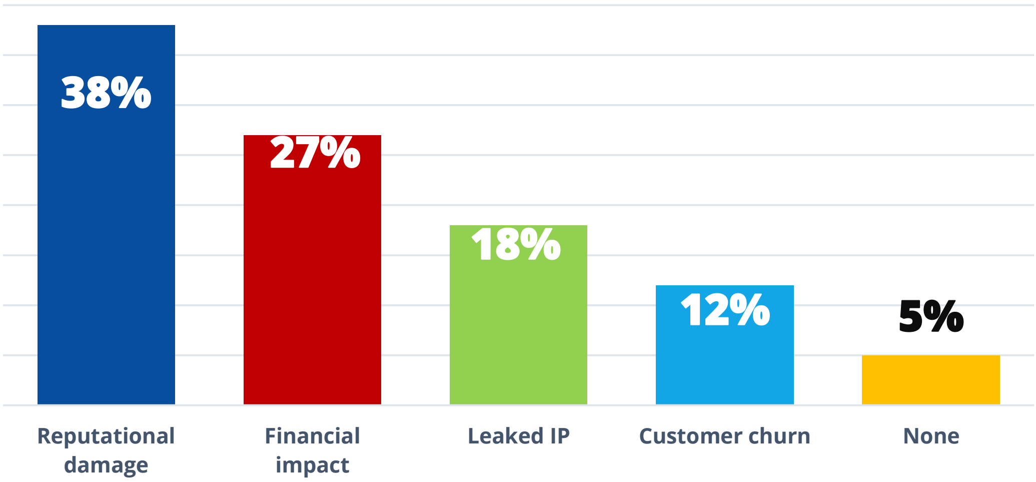
Attack vectors

_How

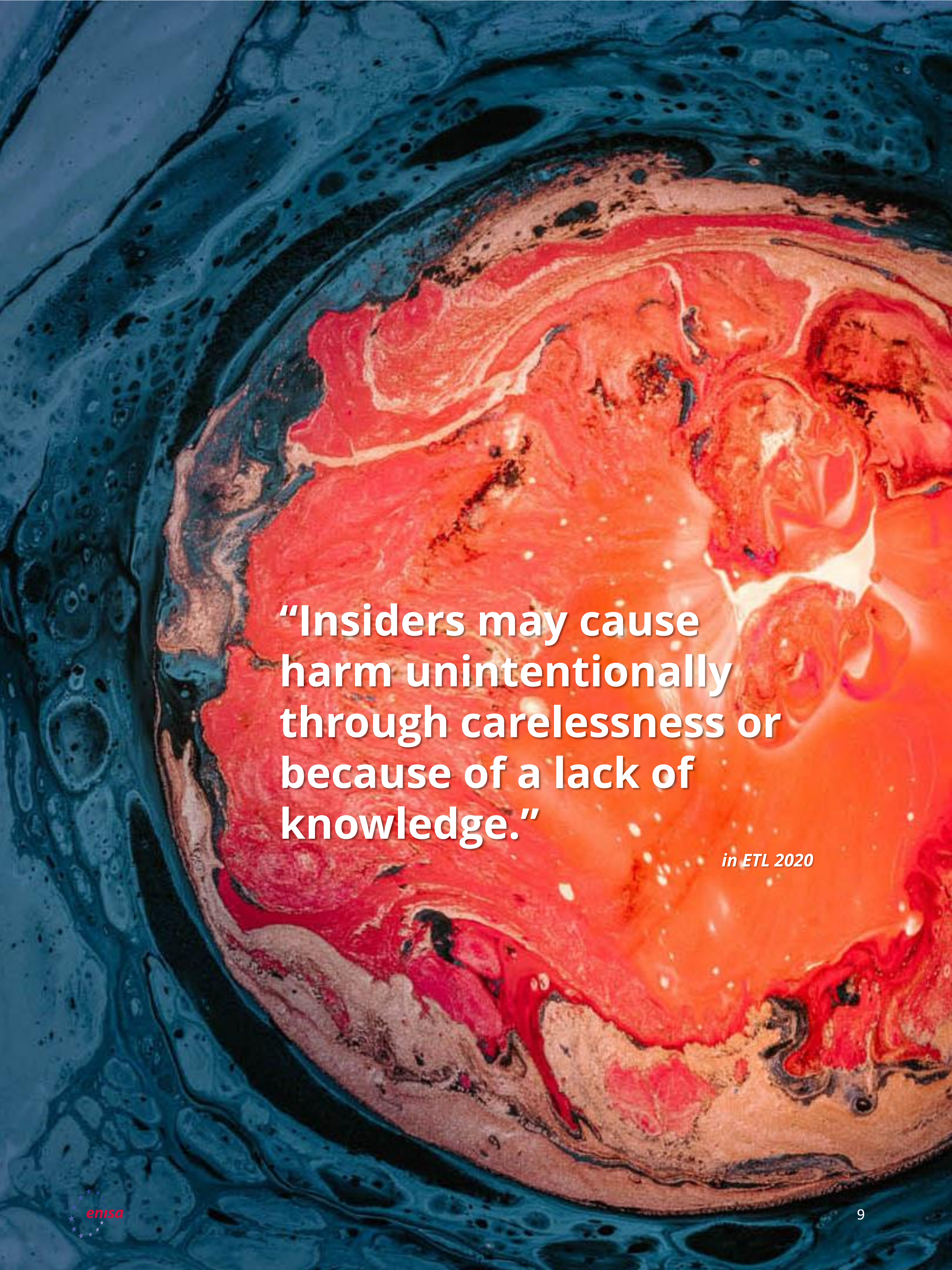
A recent survey[14] revealed that groups are the most dangerous insider threats within companies and other organisations.

According to cybersecurity experts[15], phishing (38%) is the biggest vulnerability in the case of unintentional insider threats. In a lower position of the list are spear phishing (21%), the weak or reused passwords (16%), orphaned accounts (10%) and browsing of suspicious sites (7%).

_ Impact area of insider threat incidents



Source: Egress[12]



> **“Insiders may cause harm unintentionally through carelessness or because of a lack of knowledge.”**
>
> ***in ETL 2020***

Mitigation

_Proposed actions

- Deploy a deep packet inspection (DPI) technology for anomaly detection which gives industrial users a trusted platform for monitoring the flow of process control command flow and telemetry data, and protect against outside threats. At the same time, it mitigates the risk of 'advanced' insider interference from engineers, SCADA operators or other internal staff with direct access to systems.[16]
- Introduce an insider threat countermeasures plan into the overall security strategy and policies. This plan typically includes a risk management framework, business continuity plan (BCP), disaster recovery program (DRP), a financial and accounting management policies and a legal and regulatory management.[1]
- Build a security programme that consists of: conducting threat hunting activities, performing vulnerability scanning and penetration testing, implementing personnel security measures, employing physical security measures, implement network security solutions, employing endpoint security solutions, applying data security measures, employing identity and accessing management measures, establishing incident management capabilities, retaining digital forensics services and utilisation of artificial Intelligence (AI) methods to prevent insider attacks.
- Draw up a security policy on insider threats, based on user awareness, wich is one of the most effective controls for this type of cyberthreat.
- Implement robust technical controls. Traditional security measures tend to focus on external threats, but these are usually not efficient at identifying internal risks emanating from inside the organisation. To protect assets, implement tools such as data loss prevention (DLP) to prevent data exfiltration.[1]

- Reduce the number of users with privileges and access to sensitive information. If an employee doesn’t need to have access to some information to do their work, it is better to restrict what they can see, thus avoid improper access.[17]
- Harden the digital environment, which includes tightening up the security of the network, systems, applications, data and accounts.[1]

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> **“The increase in the complexity of web application and their widespread services creates challenges in securing them against threats with diverse motivations from financial or reputational damage to the theft of critical or personal information.”**
>
> ***in ETL 2020***

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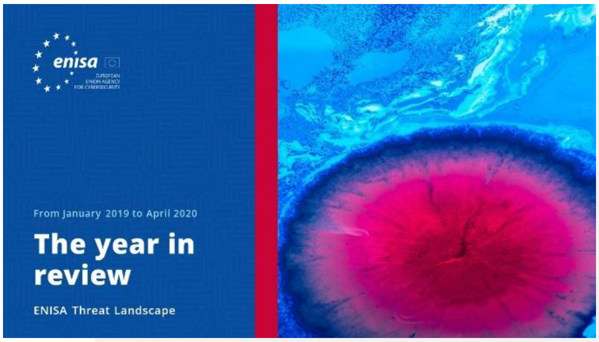

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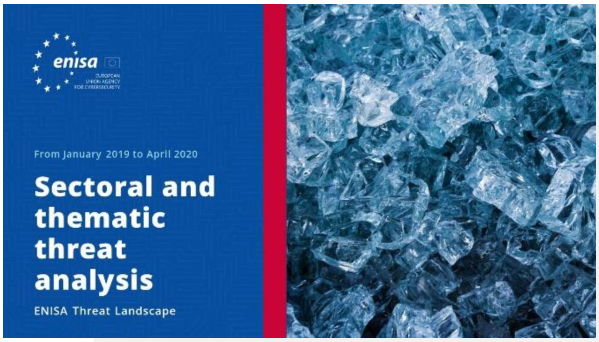

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