The Rising Threat Of Computer Viruses

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INTRODUCTION

Computer Viruses? A Rising Threat?

- ❖ **As Technology advances, so does the complexity and impact of computer viruses.**

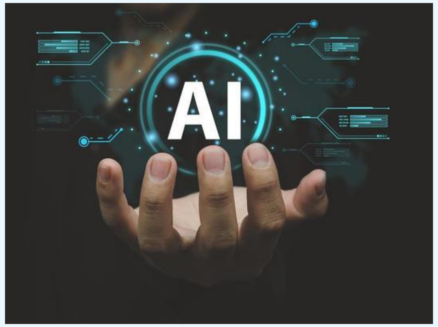
- ❖ **Private Citizens, Corporations, Critical Infrastructure and Governments alike are all at risk.**

- ❖ **Newly emerging threats such as AI-driven malware, and Ransomware-as-a-service significantly impact our digital safety.**

- ❖ **Even IoT devices at home are not safe, in fact, such devices provide weaknesses which can be exploited.**

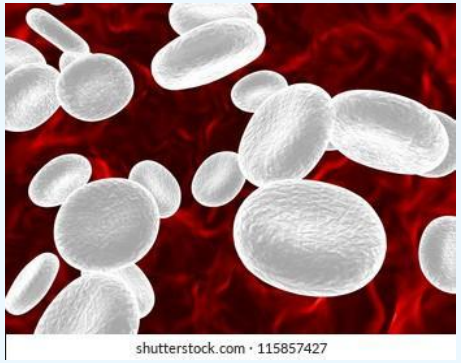
The Impact of AI on Computer Viruses

The creation and enhancement of computer viruses via AI



(Truong et al., 2020)

The Positives of AI on Computer Viruses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AI Systems To Detect Viruses

- Malware or Intrusion detection on devices and systems
- Phishing and spam email detection
- Possibility of countering Advanced Persistent Threats (APT)

Training AI to Detect Viruses

- Training AI via Supervised, Unsupervised, or Reinforcement learning
- AI Learning via Machine Learning (ML) or Deep Learning (DL)

(Truong et al., 2020)
(Mifune, 2024)

The Negatives of AI on Computer Viruses

AI-Enhanced Computer Viruses

- Previous viruses can become independent and widespread
- AI can be used to poison or sabotage trained AI models
- AI can create viruses such as ransomware

AI Learning Social Engineering

- AI can learn how to identify features of people to send a personalized phishing email or spam
- AI can find large information databases to use for targeted attacks

The evolution of Ransomware (RaaS)

What is ransomware?

- Encrypts data, blocks access until ransom is paid
- Traditionally required advanced programming skills
- Evolved into RaaS (Ransomware as a Service)

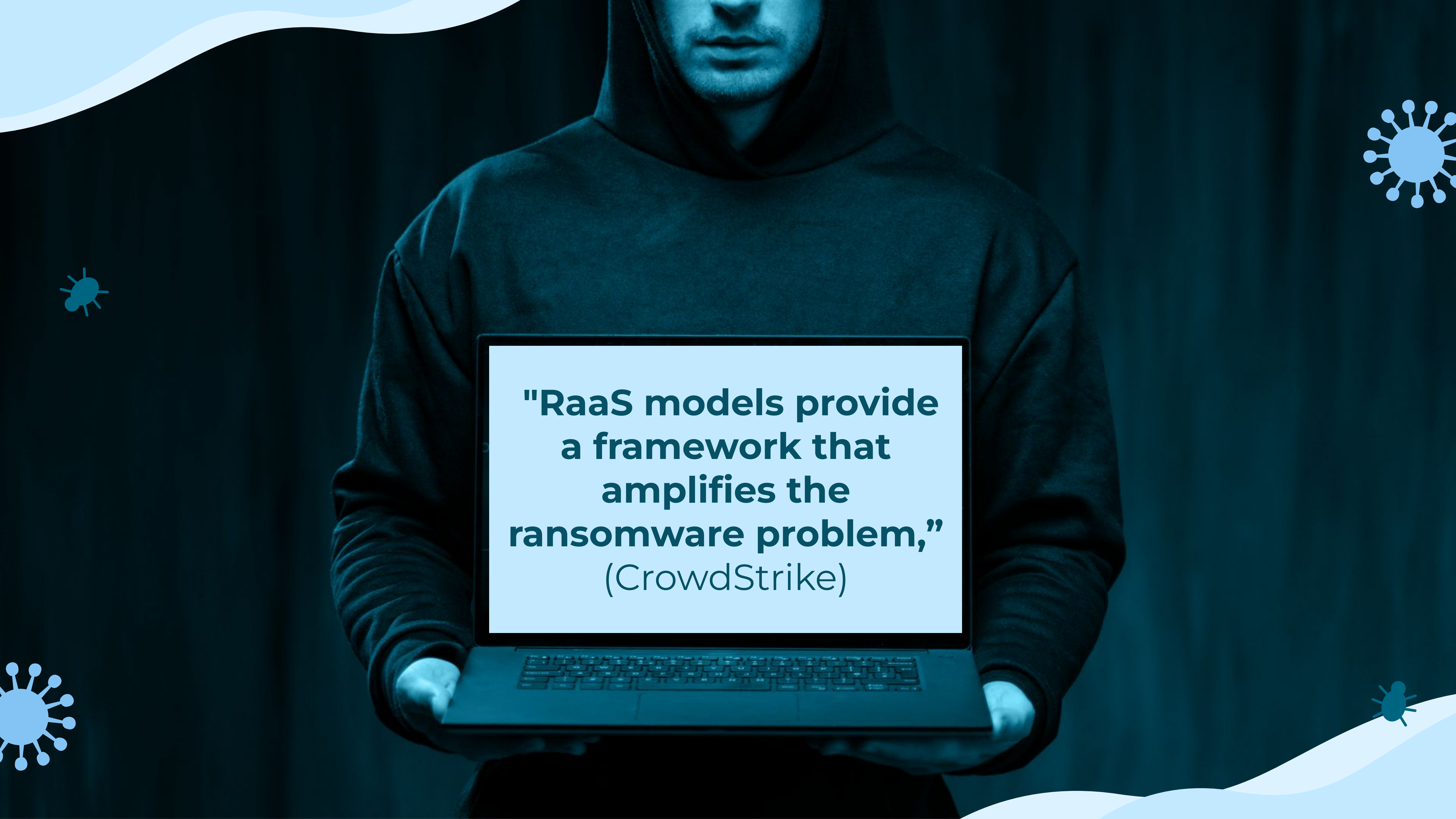
Accessibility of RaaS

- No need for advanced programming skills
- Available to a wide range of criminals
- Resulting in more cyberattacks globally

- RaaS removes technical barriers, accessible to criminals with minimal skills
- Available as subscription-based service
- Increased convenience, sophistication, and global surge in attacks

RaaS: A Business-Like Operation

- Operates like legitimate businesses with organized networks
- Specialized roles and customer support (e.g., help desk)
- Harder for law enforcement to dismantle these structures
- RaaS providers continuously refine their tools
- Enhanced features and flexibility increase threat level
- Ongoing investment in exploiting system vulnerabilities



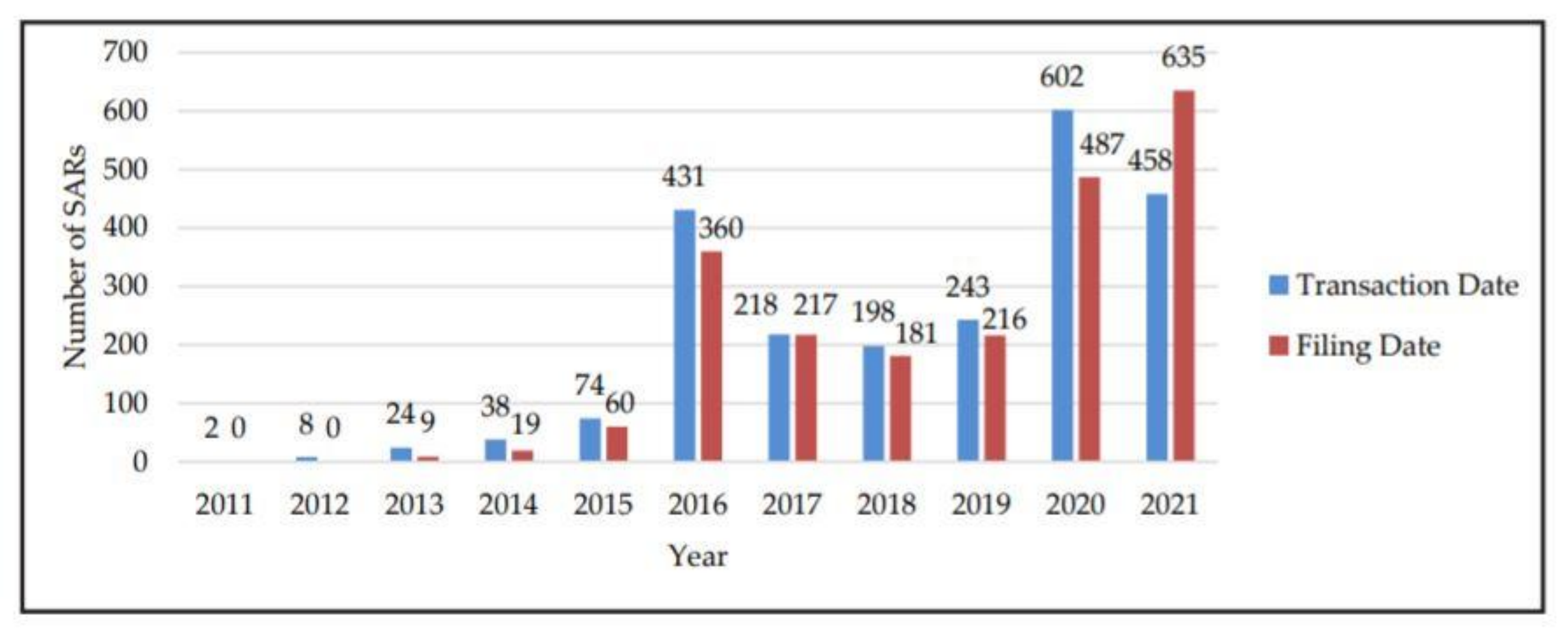
"RaaS models provide a framework that amplifies the ransomware problem,"
(CrowdStrike)

2021 Colonial Pipeline Attack

- Major disruptions in service, financial losses, and data breaches
- Loss of trust, identity theft, and financial ruin for individuals

A Growing Threat

- RaaS is a growing cybersecurity threat due to its accessibility and complexity
- Continuous evolution makes it harder to combat
- Need for coordinated global efforts to protect critical infrastructure

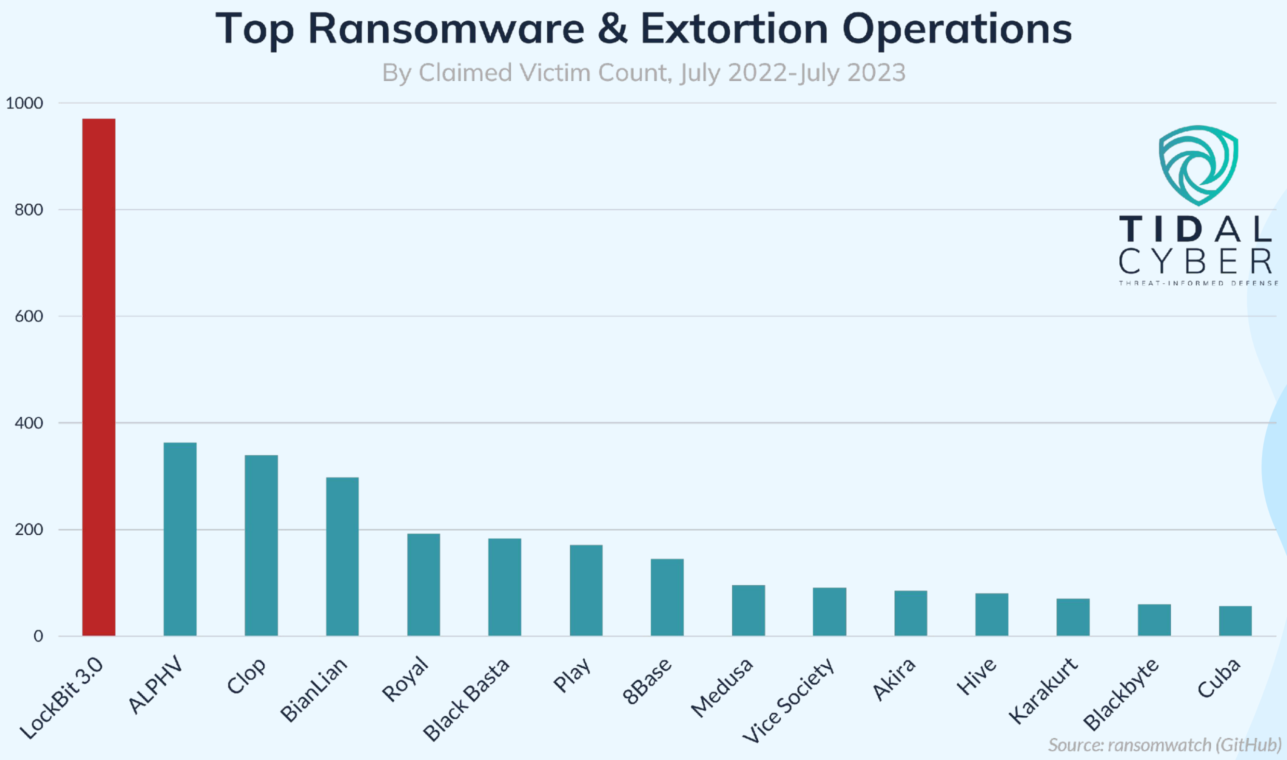


LOCKBIT 3.0

A Brief Revision on LockBit’s Origins

- ❖ **“LockBit” is a prominent ransomware group who’ve operated since 2020**
- ❖ **The group operates by contracting subscription models, otherwise known as “RaaS” (Ransomware-as-a-Service)**
- ❖ **The software has been regularly updated**

LockBit 2.0 launched June 2021 → **LockBit Linux-ESXi 1.0 launched June 2021** → **LockBit 3.0 launched March 2022**



Top Ransomware & Extortion Operations

By Claimed Victim Count, July 2022-July 2023

Source: ransomwatch (GitHub)

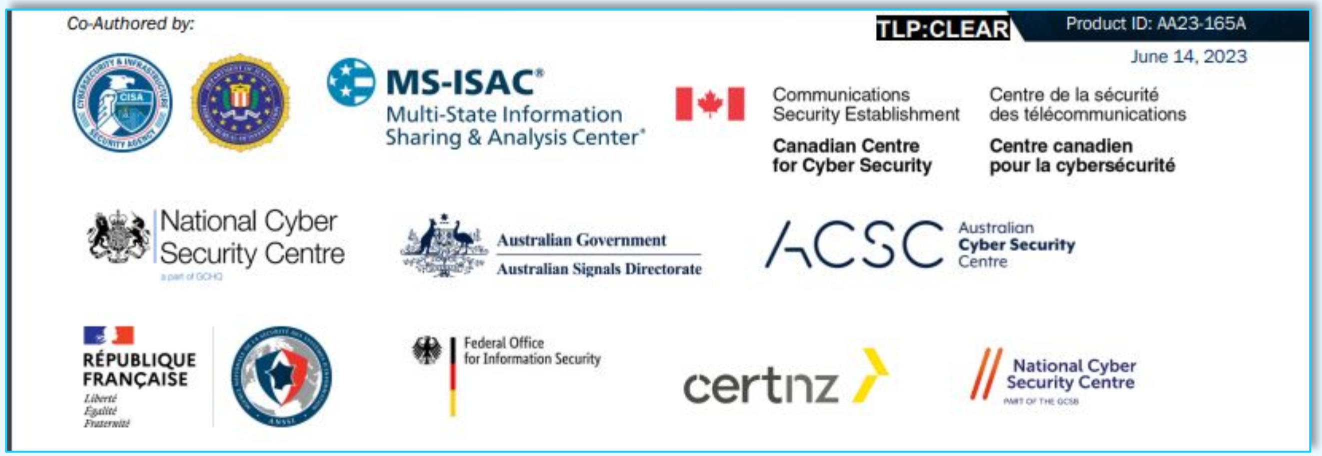
LOCKBIT 3.0

A Global Cybersecurity Threat

- Has generated over 91 Million Dollars from the United States in just 2020 (CISA, 2023).

- Bolstered International efforts to increase cybersecurity initiatives to identify and capture Cybercriminals

- Highly Adaptable and capable of evading detection.



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June 14, 2023

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Australian Government
Australian Signals Directorate

ACSC Australian
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Federal Office
for Information Security

certnz

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Security Centre
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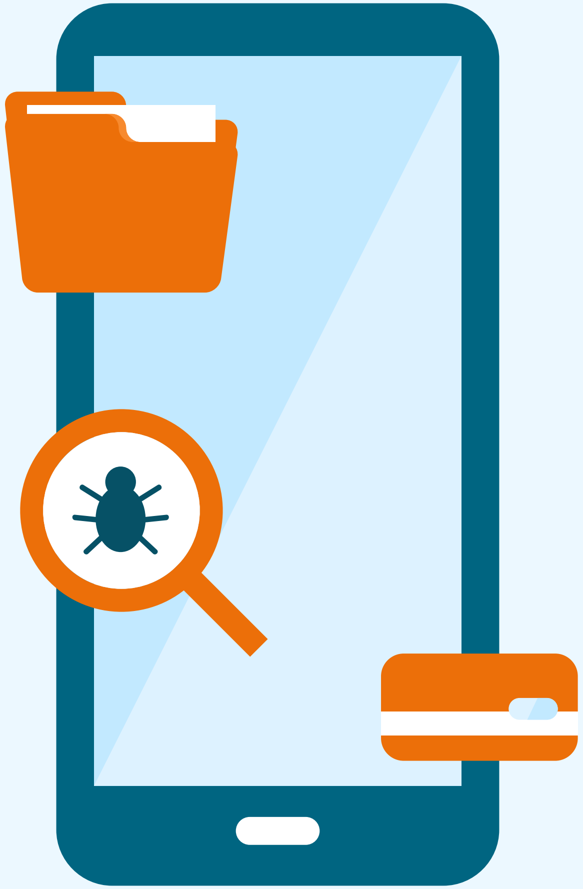
Introduction to IoT and It's Issues



Introductory

- AKA **Internet of Things**
- Invented In 1999 by computer scientist Kevin Ashton.
- Ashtons purpose with IoT was to track products using RFID chips in supply chains.
  - This was during his time as a Procter and Gamble
  - His goal was to not having anything stolen by perpetrators.
- Acts as a security and networking system for details including:
  - Sensors
  - Connectivity (ex; Bluetooth)
  - Software
  - Every piece of technology you hold contains IoT

Problems In IoT

- No matter what security system is installed there will always be weaknesses exposed.
- Hackers have figured out how to attack technology with IoT.
- Imposes a threat to society.
- The main reason for these situations to occur is because:
  - Manufactures prefer functionality over security.
  - If IT and cyber intelligence teams don't pounce now, hacking will continue to be a common practice.

Let's Dive Into A Real-Life Example of An IoT Situation

IoT And The Fish Tank Attack

General Information Of The Fish Tank

- Fish tank operating in a casino in North America.
- Only able to operate through internet connectivity.
- 10 gigabytes were installed in the system costing the casino boat loads of money.
- The fish tank was responsible for:
  - Automatic feedings
  - Adjusting temperature
  - Can be monitored through a camera remotely
- The data and security system is monitored by Darktrace.

Fish Tank Hacking Scheme

- A group of unknown hackers **main goal was to steal 10 gigabytes and data.**
- The monitoring system was being sent to servers in Finland:
  - Included footage of the fish tank operating.
  - Used to cause distraction upon criminal activity.
- Dark Trace reported the incident to the casino
  - Fun Fact: Darktrace are one of the biggest cyber intelligence groups in North America .
- The hackers were unsuccessfully caught (No descriptions of the hackers were revealed).
- Darktrace concluded that the criminal activity was not easy to discover, and valuable items were stolen.

A statement from Dark Trace: **"This was a clear case of data exfiltration, but far more subtle than typical attempts at data theft" (Mathews, 2017)**

Source: (Matthews, 2017)

KEY TAKEAWAYS...

1. Computer Viruses are a constantly evolving threat to global digital security. Awareness of computer security is essential.

2. Emerging threats such as AI- driven malware and ransomware highlight the need for international cooperation.

3. As more household devices connect to the web, private citizens face increased vulnerabilities.

THANK YOU!

Any Questions?

REFERENCES

- Mifune, S. (2024, May 28). *Police arrest man after computer viruses created by misusing AI*. The Asahi Shimbun. https://www.asahi.com/ajw/articles/15283413
- Truong, T. C., Diep, Q. B., & Zelinka, I. (2020a). Artificial intelligence in the cyber domain: Offense and defense. *Symmetry (Basel)*, *12*(3), 410. https://doi.org/10.3390/sym12030410 https://www.mdpi.com/2073-8 994/12/3/410
- *What is ransomware as a service (raas)?*. CrowdStrike. (n.d.). https://www.crowdstrike.com/en-us/cybersecurity-101/ransomware/ransomware-as-a-service-raas/
- Buxton, O. (2024, October 4). *7 dangerous new computer viruses & malware in 2024*. The 7 Most Dangerous New Computer Viruses & Malware of 2024.https://www.avast.com/c-new-computer-viruses
- *Rise in active raas groups parallel growing victim counts: Ransomware in 2H 2023*. Trend Micro (US). (n.d.). https://www.trendmicro.com/vinfo/us/security/news/ransomware-by-the-numbers/rise-in-active-raas-groups-parallel-growing-victim-counts-ransomware-in-2h-2023
- Paganini, P. (2021, October 16). US treasury fincen linked $5.2B in BTC Transactions to ransomware payments. Security Affairs. https://securityaffairs.com/123431/malware/fincen-ransomware-payments.html
- *Understanding ransomware threat actors: LockBit | CISA*. (2023b, June 14). Cybersecurity and Infrastructure Security Agency CISA. https://www.cisa.gov/news-events/cybersecurity-advisories/aa23-165a
- *What Is the Internet of Things?* (n.d.). Oracle. Retrieved November 7, 2024, from https://www.oracle.com/ca-en/internet-of-things/
- *Top IoT Security Challenges and Best Practices*. (n.d.). Balbix. Retrieved November 7, 2024, from https://www.balbix.com/insights/addressing-iot-security-challenges/
- Merchant, N. (n.d.). *IoT Technologies Explained: History, Examples, Risks & Future*. Vision of Humanity. Retrieved November 7, 2024, from https://www.visionofhumanity.org/what-is-the-internet-of-things/
- Matthews, L. (2017, July 27). *Criminals Hacked A Fish Tank To Steal Data From A Casino*. Forbes. Retrieved November 7, 2024, from