



The Rising Threat Of Computer Viruses



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INTRODUCTIO

Computer Viruses? A Rising Threat?

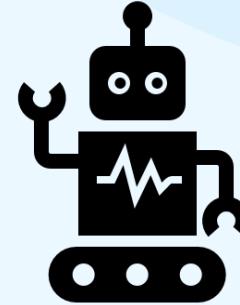
- ❖ **As Technology advances, so does the complexity and impact of computer viruses.**



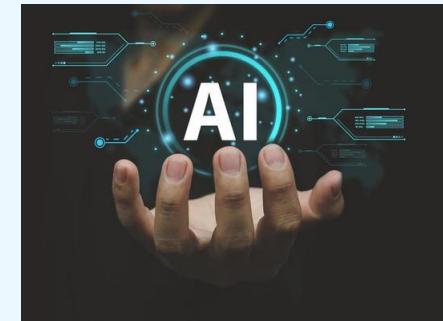
- ❖ **Private Citizens, Corporations, Critical Infrastructure and Governments alike are all at risk.**
- ❖ **Newly emerging threats such as AI-driven malware, and Ransomware-as-a-service significantly impact our digital safety.**
- ❖ **Even IoT devices at home are not safe, in fact, such devices provide weaknesses which can be exploited.**

The Impact of AI on Computer Viruses

The creation and enhancement of
computer viruses via AI



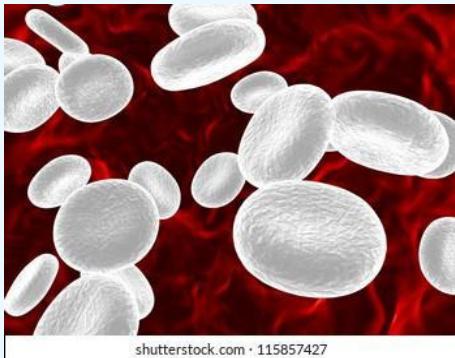
ChatGPT





(Truong et al., 2020)

The Positives of AI on Computer Viruses



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

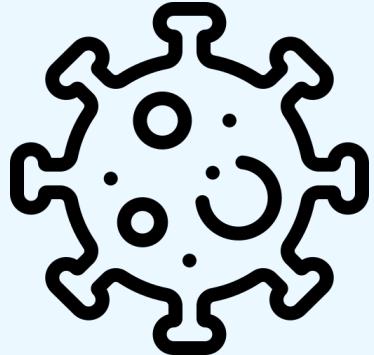
- Training AI via Supervised, Unsupervised, or Reinforcement learning
- AI Learning via Machine Learning (ML) or Deep Learning (DL)





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

The Negatives of AI on Computer Viruses



AI-Enhanced Computer Viruses

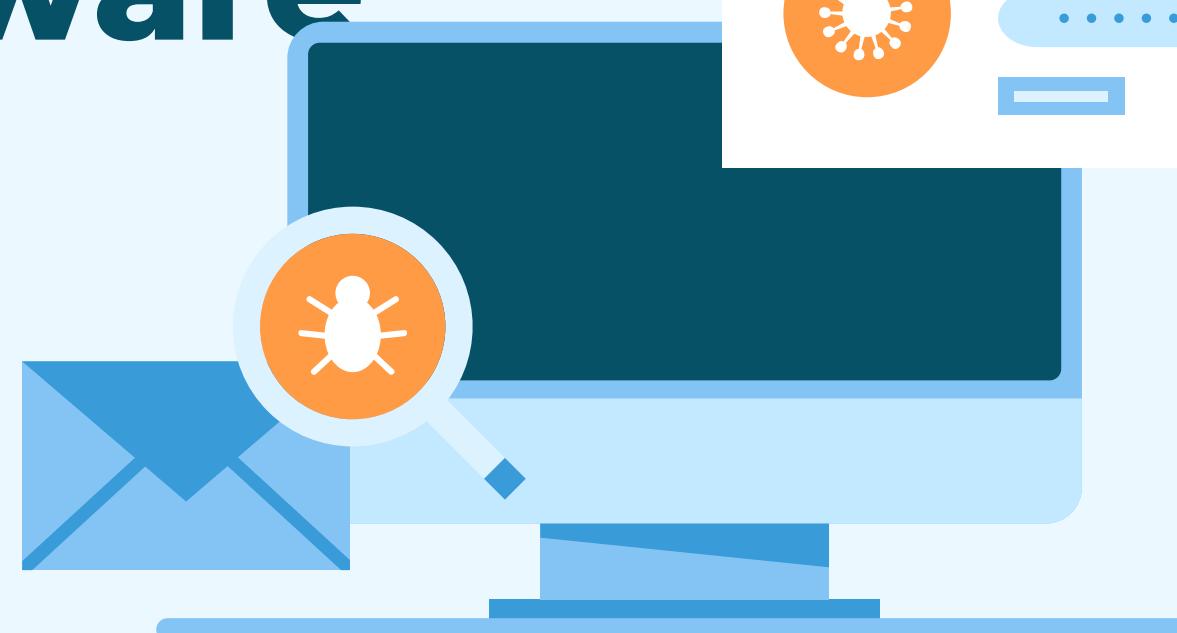
- Previous viruses can become independent and widespread
- AI can be used to poison or sabotage trained AI models
- AI can create viruses such as ransomware

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

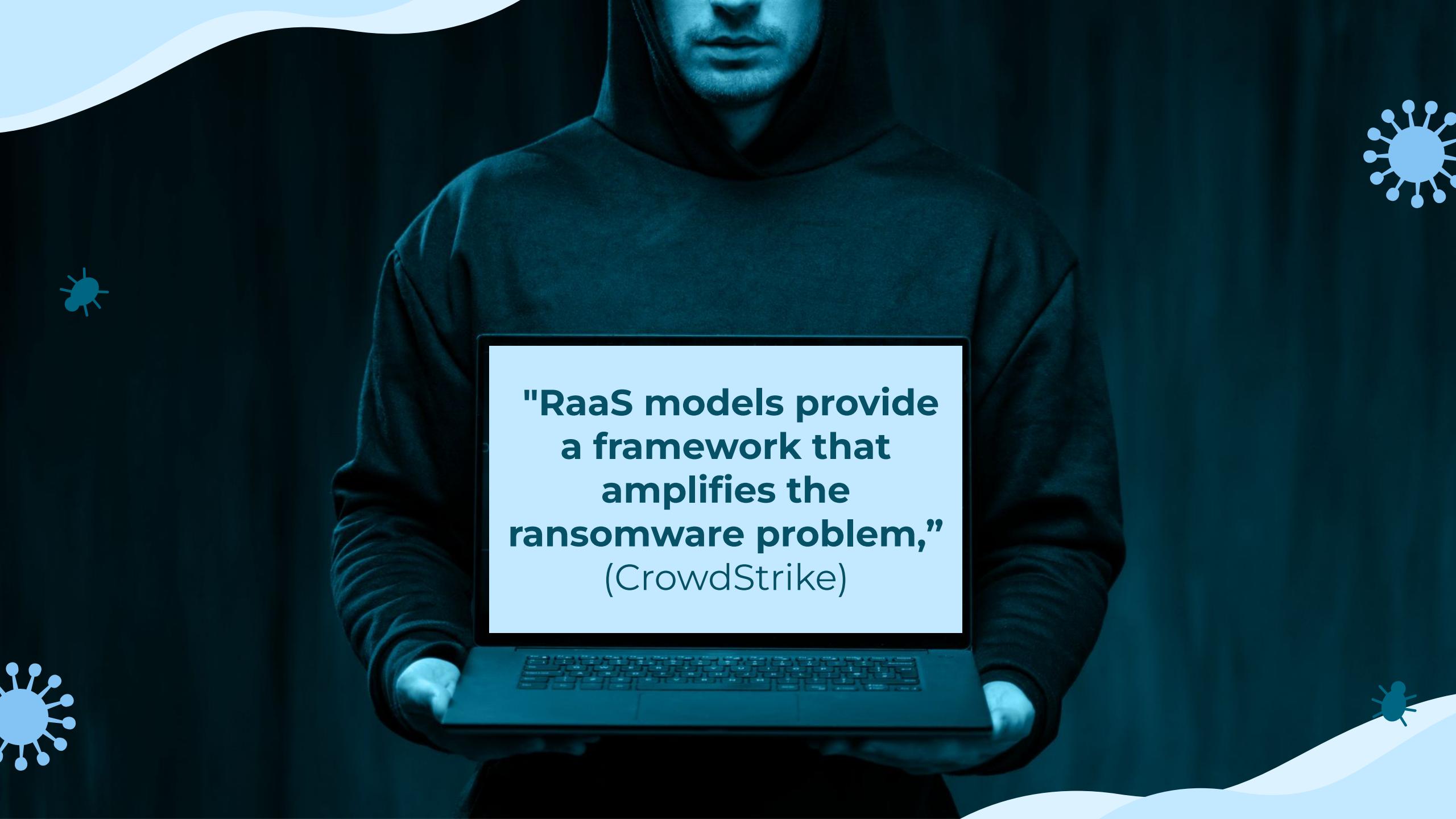




RaaS: A Business-Like Operation

- 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

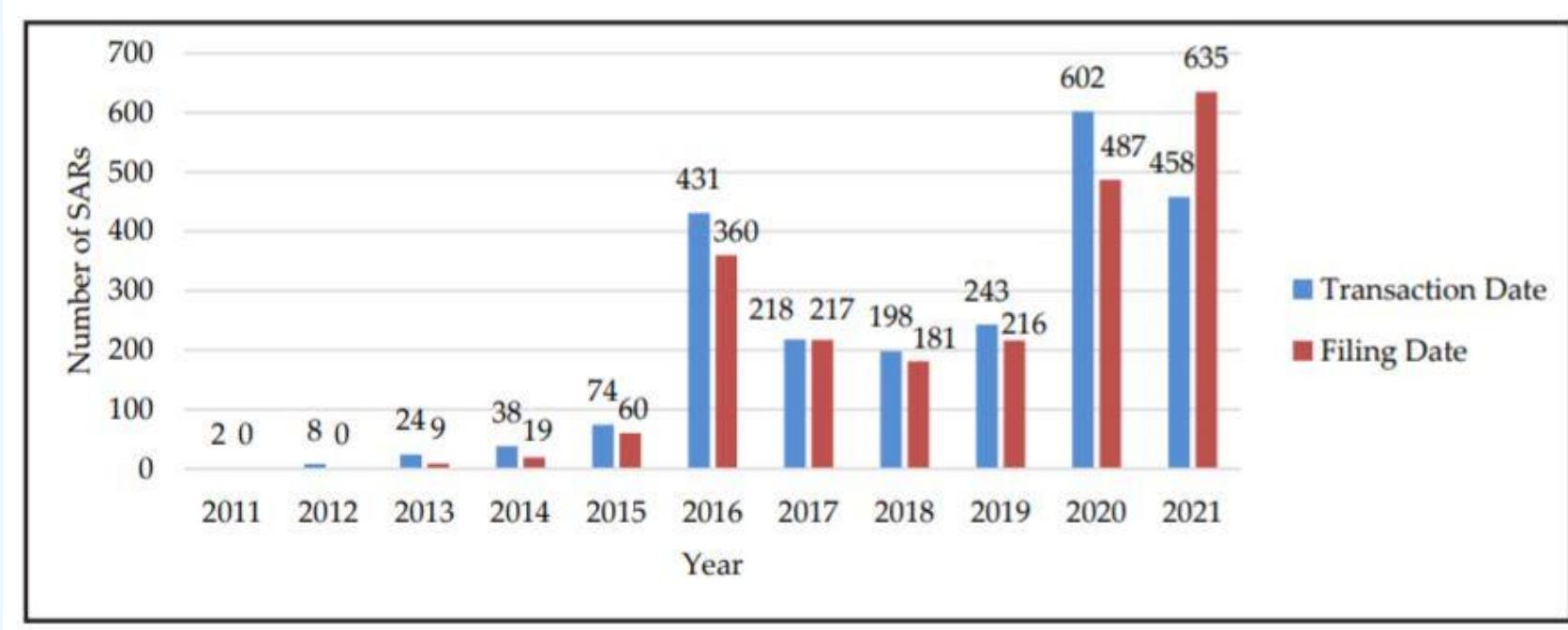
- Major disruptions in service, financial losses, and data breaches
- Loss of trust, identity theft, and financial ruin for individuals





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

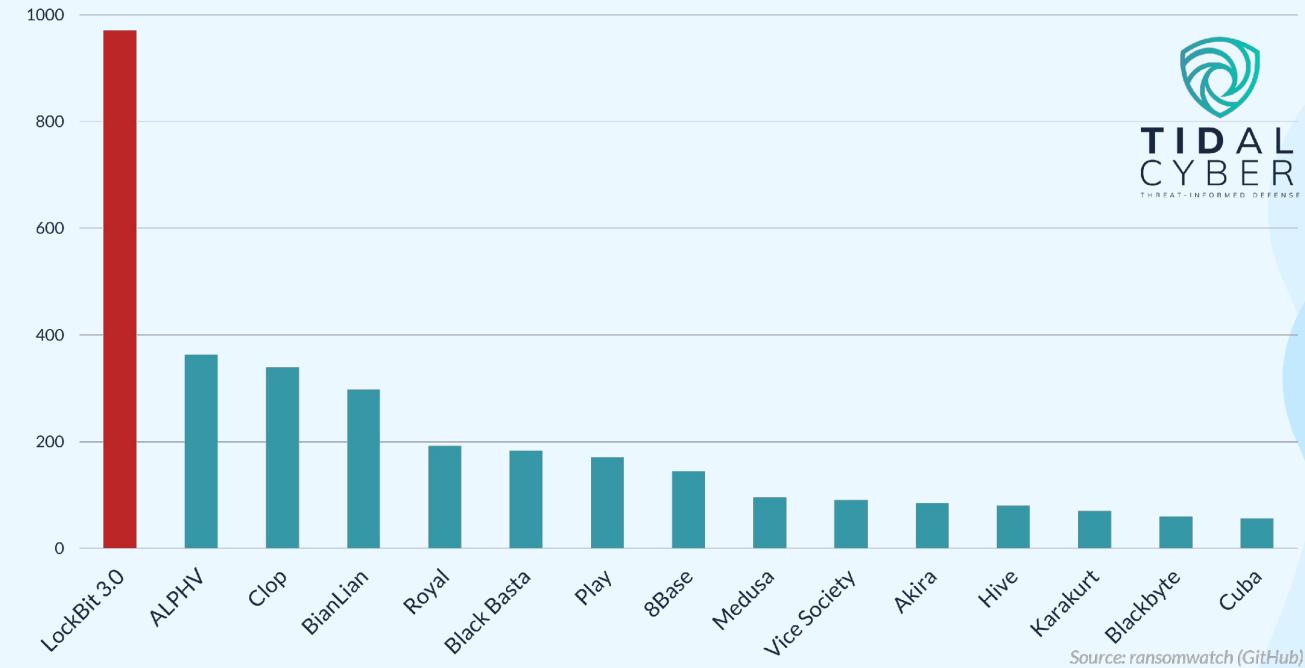
LockBit 2.0 launched
June 2021

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

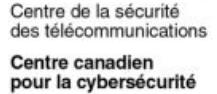
A Global Cybersecurity Threat

- ❖ **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.**

Co-Authored by:

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 Communications Security Establishment Canadian Centre for Cyber Security 

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:
 - Manufacturers 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

TAKES

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/2073-8994/12/3/410>

• *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

