ASM is easy, ASD is harder

Attack Surface Management made easy with Attack Surface Discovery

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Who am I?

- Patrice Auffret
  - Cybersecurity engineer
  - 20+ years of experience
- Different positions
  - Offensive security
    - Pentests, Web application audits
  - Defensive security
    - Collect and analysis of information system events (SIEM)
  - Trainer
    - Big data (Splunk, Elastic Stack)
  - Speaker
    - SSTIC, TROOPERS, Hack.lu, UYBHYS, ekoparty, EuSecWest, …
- **ONYPHE** founder & CTO

Photo: Michel François Salmon

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Agenda

- Introduction
- Current state of defensive cybersecurity
- ASD + ASM Demo
- Conclusion

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Introduction

What is ONYPHE?

ONYPHE company

- **Created in 2017**
  - Pionner in Attack Surface Management
  - French company
  - Self-financed (read: no investor)
- One main goal
  - **Fight ransomware exposure**
- **Own technology**
  - 100% in-house development
  - **Data stored on dedicated servers**

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What is ONYPHE?

- Cyber Defense Search Engine
  - **Attack Surface Discovery**
  - **Attack Surface Management**
- Collected by
  - Active probing
  - Passive listening
  - Downloading

- Data is split into
  - **20 categories**
- **Everything is stored**
  - Normalization
  - Correlation
- Data searchable from
  - A Web search form
  - An API

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Attack Surface Discovery (1st step)

- **Attack Surface Discovery solution**
  - Domain-based approach
  - Protocol-based identification
  - Device classification

- **Scanning different networks every month**
  - IP addresses: **3.8B+ IPv4, 130M+ IPv6**
  - URL scanning: **300M+**
  - Dark Net scanning: **22k+**

- **Find unknown assets**

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Top threats in 202x

- External initial access vectors
  - Software vulnerabilities
  - Brute-force credential attacks
  - Previously compromised creds

- **46% of all intrusions**

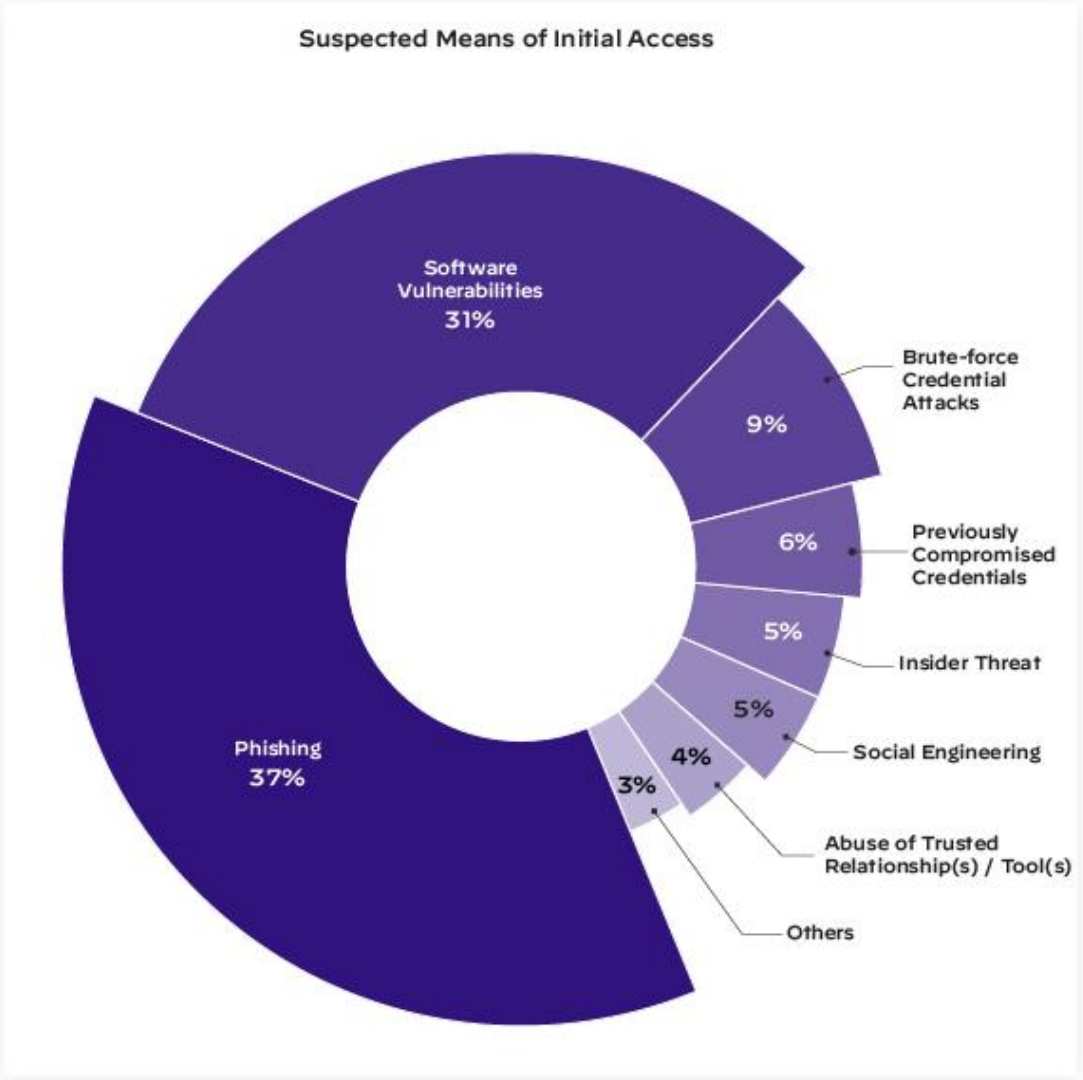


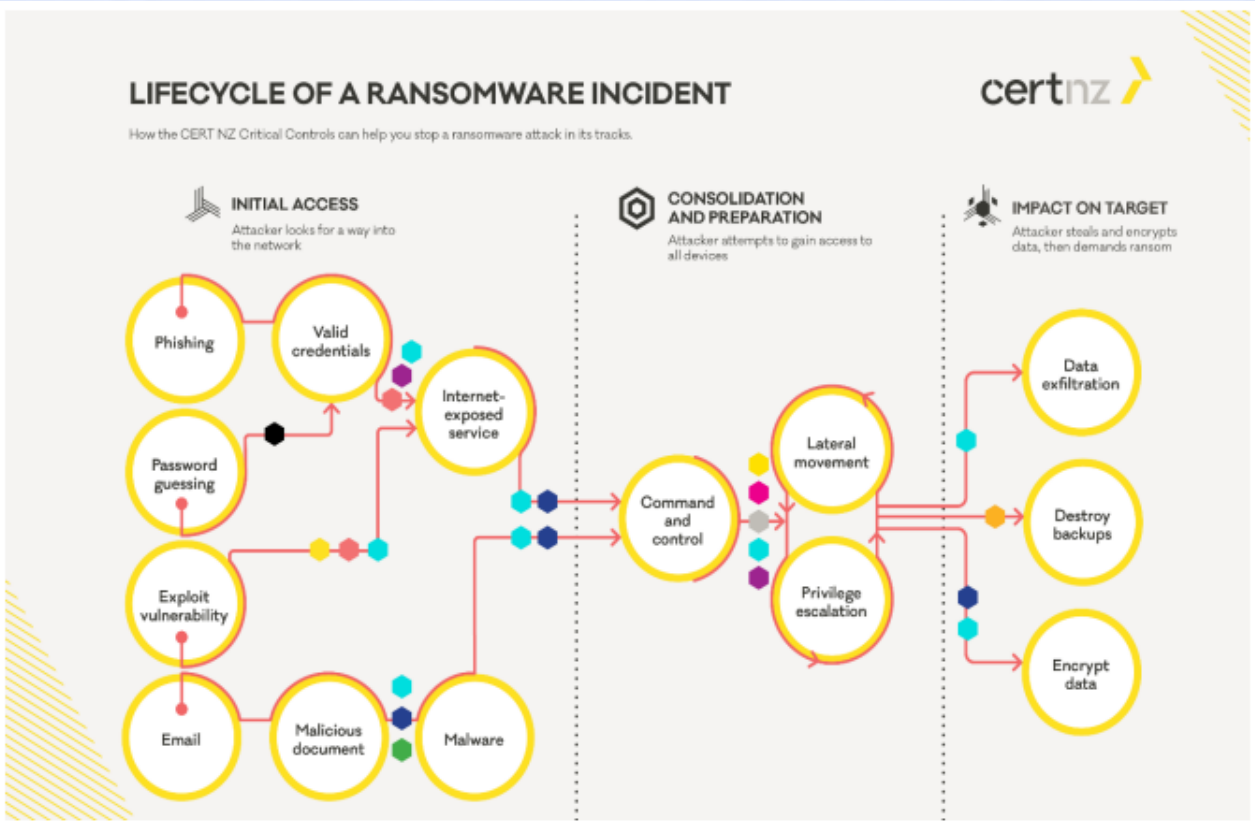
Figure 1. Suspected means of initial access according to Unit 42 incident response case data.

https://unit42.paloaltonetworks.com/incident-response-report/

Top threats in 202x

- External initial access vectors
  - Phishing for valid creds
  - Password spraying/guessing creds
  - Vulnerability exploitation

- **~50% of all intrusions**



https://www.cisa.gov/sites/default/files/2023-06/aa23-165a_understanding_TA_LockBit_0.pdf

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Attack Surface Management (2nd step)

- **Attack Surface Management solution**
  - Risk baseline approach
  - Focus on most critical risks
  - Continuous monitoring

- **Identify initial access vector risks**
  - Exposed RDP/VNC/SSH/Telnet services
  - Exposed VPN servers
  - Critical vulnerabilities: **60+ CVEs**

- **Cut ransomware risk upfront**

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Data stored for historical searches

- **Historical data**
  - Up-to 12-month
  - Go back in the past
  - Forensic analysis
- **DNS enumeration**
  - Starting from a single domain
- **Data lake**
  - Best leveraged from our numerous APIs

Current state of defensive cybersecurity

About decades of security failures

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ONYPHE view on Attack Surface Management

- What is **Attack Surface Management**?
  - Term coined by Gartner somewhere in 2020
  - New tool in defensive cybersecurity arsenal for organizations
- Goal
  - Help organizations have a better view on exposed assets
- But how to find the unknown?
  - **Attack Surface Discovery** to the rescue

Decades of patch management failures

- Traditional approach
  - Using a vulnerability scanner

- Vulnerability scanners objective
  - **To have a vulnerability report with content**
  - Every vulnerability should be listed
    - Even those not exploitable or useless from an attacker's perspective

- **Conclusion**
  - **Remediation fatigue**
  - Impossible to patch everything

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On vulnerability scoring systems

- Decades of trying to « score » a vulnerability danger
  - CVSS - Common Vulnerability Scoring System
  - EPSS - Exploit Prediction Scoring System
    - https://www.first.org/epss/
- **It just doesn’t work anymore**
- Let’s define a **binary scoring system**
  - A vulnerability is exploited to commit crime
  - Or it is not
- CISA Known Exploited Vulnerability catalog
  - https://www.cisa.gov/known-exploited-vulnerabilities-catalog

Pentesting as a complementary approach

- **« Let's pentest the service before it is put online »**
  - Scope-based
  - Best scenario
    - IP addresses list
    - Hostnames list
- Cybercriminals are scope agnostic
- **Why should legitimate pentests be scope-based**
  - **While illegitimate "pentests" performed by criminals are not?**

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Last note on how to define a scope

- **Scope should be**
  - Domain names
  - Related « pivots »
  - IP addresses
- Should also include
  - Subsidiaries
  - Suppliers
- If subsidiaries and/or suppliers handle your data
  - They are part of **YOUR** attack surface

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Demo

Attack Surface Discovery & Attack Surface Management

Conclusion

Key takeaways

Statistics against demo’ed scopes

- **VPN servers**
  - 100%
- **RDP exposure**
  - 100%
- **SSH exposure**
  - 100%
- **Critical vulnerability**
  - 67%

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To sum it up

- **Vulnerability scanners don’t work**
  - They MUST find something, even useless
  - Good for KPIs and colorful dashboards, not for operational cyberdefense
- **Patch management doesn’t work**
  - Decades of patch management programs failures
  - Remediation fatigue **HAS** a human cost
- **ASM is the easy part, ASD is the hard part**
  - Identify the unknown that has to be managed
  - ASD can also be used to feed a vulnerability scanner

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To sum it up

- **Don’t rely solely on IP addresses inventory**
  - IP addresses are subject to change, not domain names
  - Rebuild your inventory every month

- **Doesn’t matter if an asset is on-prem or in the cloud**
  - Criminals don’t care
  - Assets handling your data are your responsibility, no matter what

Focus is key

- **Put your efforts on what matters most**
  - Exposed RDP/VNC/SSH/Telnet services
  - Exposed VPN Servers
  - Critical vulnerabilities
- **Identify the unknown**
  - Implement an attack surface discovery program
- **Doing that will reduce ransomware risk tremendously**
  - Then, handle remaining issues

Merci.

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Register: https://www.onyphe.io/signup

Pricing: https://www.onyphe.io/pricing

Github: https://github.com/onyphe

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