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The bridge to possible

The Past, Present and Future of Ransomware

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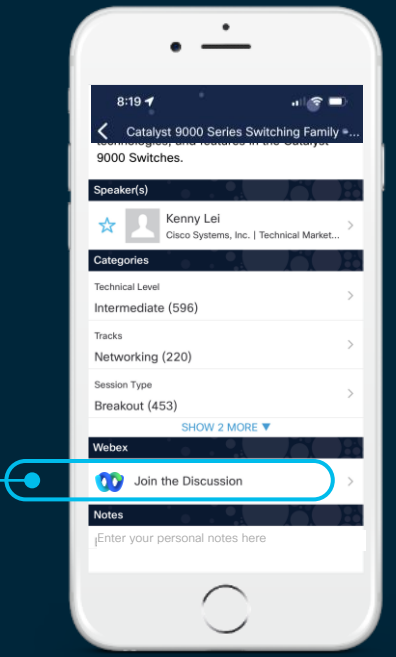

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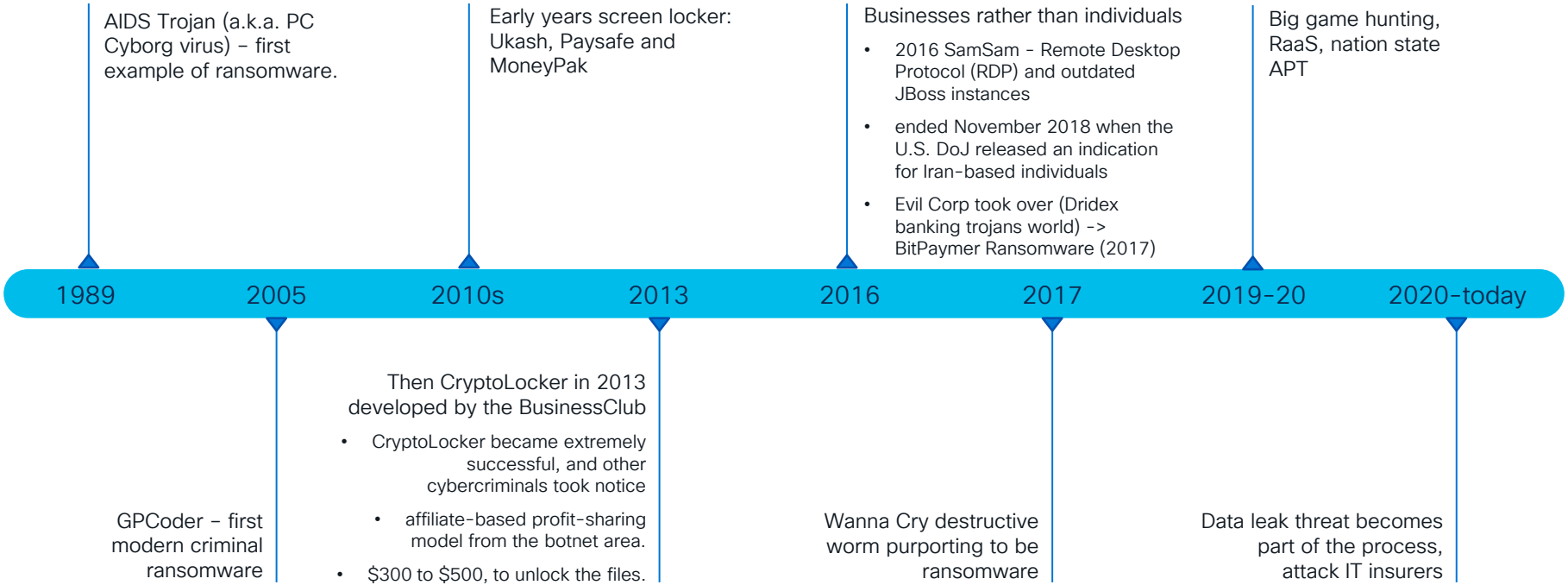
Agenda

- Ransomware past and evolution
- The ecosystem of ransomware
- Closer Look: How does REvil work?
- How do we protect ourselves?
- What should organizations do?
- Future outlook

Ransomware Evolution



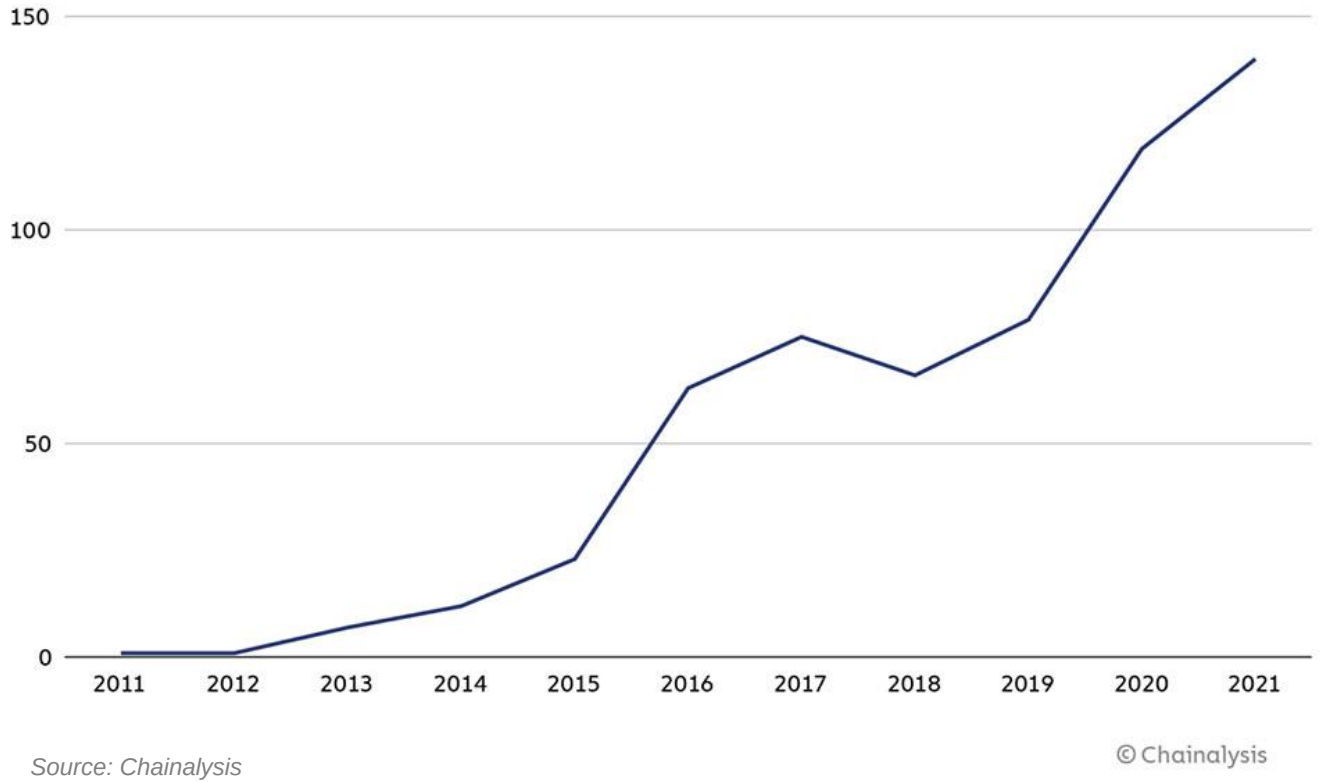
Ransomware evolution

- **1989 AIDS Trojan** (a.k.a. PC Cyborg virus) – first example of ransomware. Sending US$189 to a post office box in Panama
- **2005 GPCoder** – first modern criminal ransomware – eGold and Liberty Reserve digital currencies
- Early screenlockers: Ukash, Paysafe and MoneyPak
- Then, **CryptoLocker** in **2013** developed by the BusinessClub
  - CryptoLocker became extremely successful, and other cybercriminals took notice. The kickoff of today's ransomware business.
  - Affiliate-based profit-sharing model from the botnet
  - $300 to $500 to unlock the files - **$3 million revenue overall**

Ransomware evolution (cont.)

- **2016** Businesses rather than individuals
  - 2016: SamSam – Remote Desktop Protocol (RDP) and outdated JBoss instances
- **2017** Evil Corp took over (Dridex banking trojans world) -> BitPaymer Ransomware
- **2017** WannaCry destructive worm purporting to be ransomware
- **2018-20** RaaS, Big game hunting, nation state APT – GrandCrab/Revil, Lazarus group (VHD) - profit of $100 million each year
- **2020 – Present** Data leak threat becomes part of the process, attack IT insurers (CNA Financial (Phoenix CryptoLocker)

Active ransomware strains by year 2011 – 2021



Source: Chainalysis

The ecosystem of ransomware

Groups and affiliates (RaaS)

- **Botmasters** and **account resellers**: Initial access
- **Red team**: Lateral movement, gather information about the victim and steal internal documents
- **Analysts**: Who will try to figure out the actual financial health of the target, set the highest ransom price possible
- **Malware developers**: Sell ransomware software in the darknet
- **Negotiator/Money laundry**: As the name says

Example: How did REvil work?

- Init access: like RDP accesses, phishing, and software vulnerabilities
- Encrypt files
- Data leak extortion: Leak on the group's website (darknet leaks site)
- Voice calls to business partners and journalists
- CEOs are threatened with digital persecution
- Protection money

Do we know who the attackers are?

- Normal everyday people
  - IT admins, programmers, students
  - Talos Lockbit operator interview
- From petty criminals to organized crime syndicates
- Low-tech opportunistic criminals to elite hackers

How do we protect against ransomware?

- Should I pay or not?
  - Answer is not a straightforward yes or no.
  - “It depends” ☺
  - Local laws come into the picture
- Can I just let my insurance pay?
  - Maybe, but risky (Don't trust criminals)
  - AXA France for example excludes ransomware now!
  - Others will likely follow
- We need a technical solution

What should I be doing as an organization?

We need a multi-layered security architecture (defense-in-depth):

- User education
- Offline backups (not available for a single admin)
- 2FA/Biometric
- Patching: 1-days (rarely 0-day) are often used for first access (e.g., Microsoft Exchange vulnerabilities)
- Active scans to find existing bots and IOCs/Penetration tests
- Global incident response plans and tabletop exercises
- Attack simulations to test your processes

Future outlook

- Pandemic has certainly increased the bot count, actors might already have access to your network
- Attackers go against the low-hanging fruits. Most ransomware attacks are opportunistic.
- States are involved/perpetrators are protected
- Today's geopolitical situations can be a breeding ground
- Elite threat actors are starting to target firmware
  - Conti Leaks (LoJax, TrickBoot, MosaicRegressor,..)
  - UEFI/BIOS (SPI chip – firmware store), System Management Mode (SMM), Intel Management Engine (ME), AMT - CSME-Version-Detection-Tool

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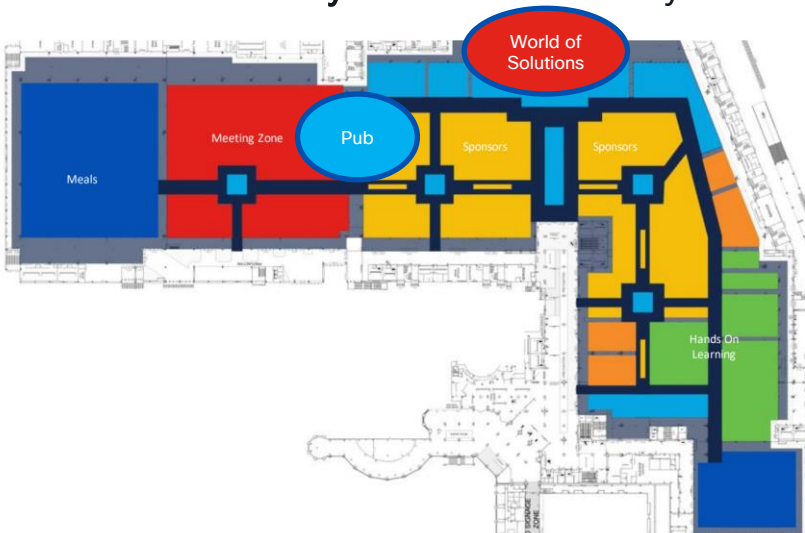
- We would like to invite you to **share your thoughts, feedback, and experiences using our Cisco Secure products**. Your opinion is valued and could help others in their buying process.

- We will **have a team at the Cisco Secure Pub and World of Solutions – Security** area to assist you and you will have **full control and can edit or delete your review** at any time.

- We will be **wearing black t-shirts with "What's Your Story?"** printed on the front.



For more information, please reach out to

- **Cindy Valladares 503-784-8178**
- **Tazin Khan (she/her) (917) 602-6338**

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CISCO SECURE

Security Reference Architecture

TALOS — Threat Intelligence | Malware Analytics | Actionable Intelligence | Unmatched Visibility | Collective Responses

Security Operations

SECURE X (XDR)

- Managed Detection and Response Services
- Security, Orchestration, Automation and Response
- Incident Response and Remediation Services
- Threat Visibility & Hunting
- Device Insights
- Kenna Vuln Mgmt
- Secure Cloud Insights
- 3rd Party Integrations

User/Device Security

ZERO TRUST

Adaptive MFA | Passwordless | Trust

Duo Secure Access

Secure E-mail

SASE/REMOTE WORKER

Unified Client | EDR | Cloud Managed

Cisco Secure Client

- VPN
- Posture
- Telemetry
- Threat
- Query

ThousandEyes (Visibility)

Device Mgmt

Meraki SM OS, App Control

Network Security

Cloud Edge

SECURE ACCESS SERVICE EDGE (SASE) | ZERO TRUST

Threat Protection | Secure Access Control | Managed Remote Access

PRIVATE CLOUD EDGE (MSP or CUSTOMER)

Reliable | Scalable | Flexible

Umbrella/Duo

- ZTNA
- DNS-layer security
- Secure web gateway
- L7 firewall + IPS
- Cloud access security broker/ shadow IT
- RAaaS
- SSL decryption
- Remote browser Isolation
- Data loss prevention
- Cloud malware detection

SDWAN

- Meraki SDWAN
- SDWAN by Viptela
- Secure Firewall
- ThousandEyes
- Cloud DDoS,WAF

On-Premises

SASE/SDWAN

Scalable | Flexible | Visibility | Comprehensive Security

Network Edge

- Meraki SDWAN
- SDWAN by Viptela
- Secure Firewall
- ThousandEyes

IoT/OT SECURITY

Secure Critical Infrastructure | Unified IT and OT

- Industrial Router
- Industrial Firewall
- Industrial Switch/AP
- Cyber Vision
- ISE TrustSec

ZERO TRUST

Segmentation | Identity and Context | Profiling | Containment | Encrypted Visibility

- Security Analytics and Logging
- Secure Firewall
- DuoCloud SSO+IDP
- Network Gateway
- Secure DDoS
- Meraki Full Stack
- Secure Network Analytics
- Secure Web Appliance
- ISE TrustSec
- Cisco DNA Center

Application Security

ZERO TRUST

Policy | API Security
Application Segmentation
Run-time Application Security

Application Security Stack

- Cloud Native Security
- APIC
- Secure Workload
- Secure Application by AppDynamics

App Observability | Detection | Response

- Hybrid Private
- Public Cloud
- Secure Cloud Analytics
- Secure Firewall
- ThousandEyes
- Secure DDoS, WAF/Bot

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