Dissecting Advanced Targeted Attacks - Separating Myths from Facts

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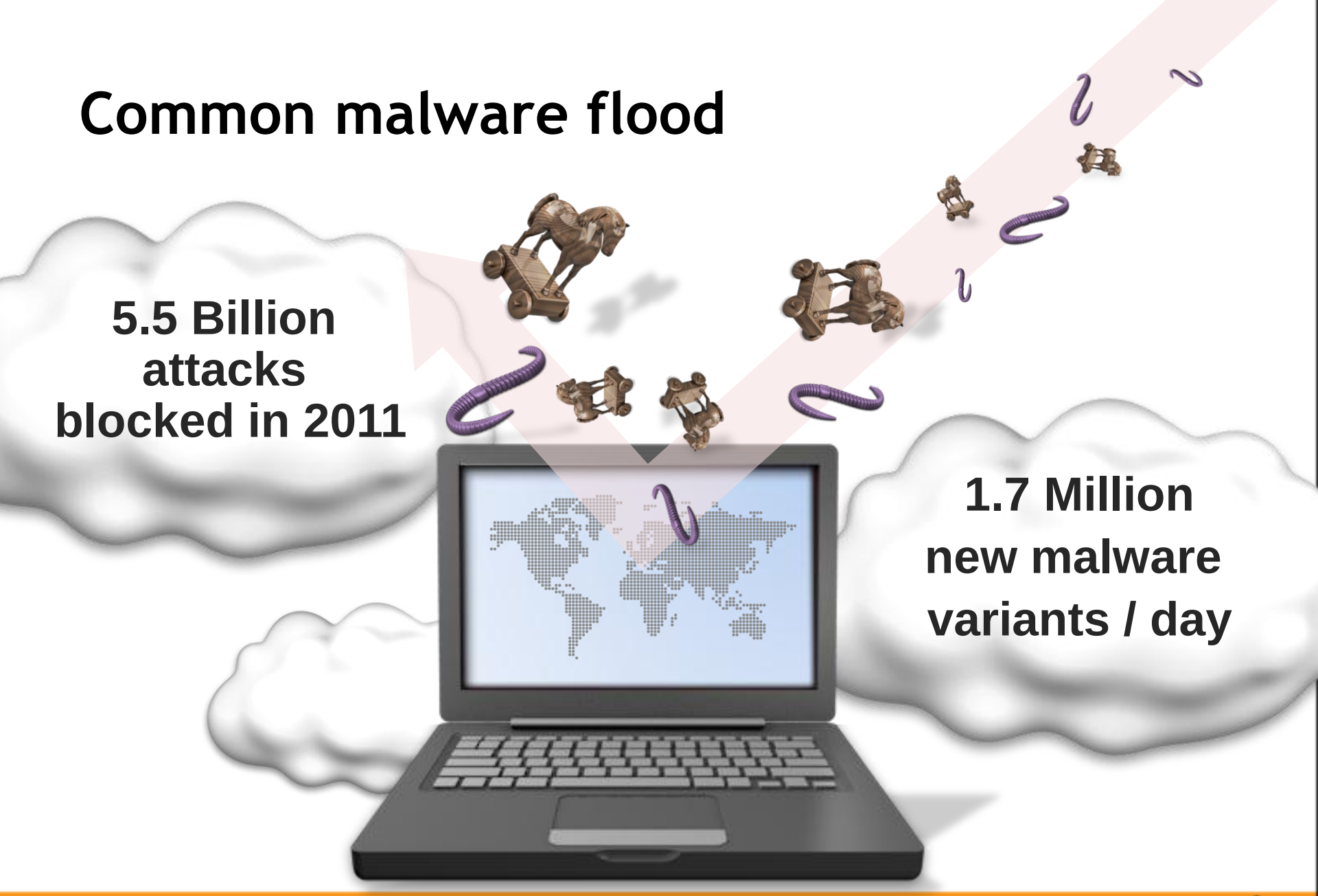
Session ID: SPO-301
Session Classification: General Interest

How much is Hype or FUD?

Common malware flood

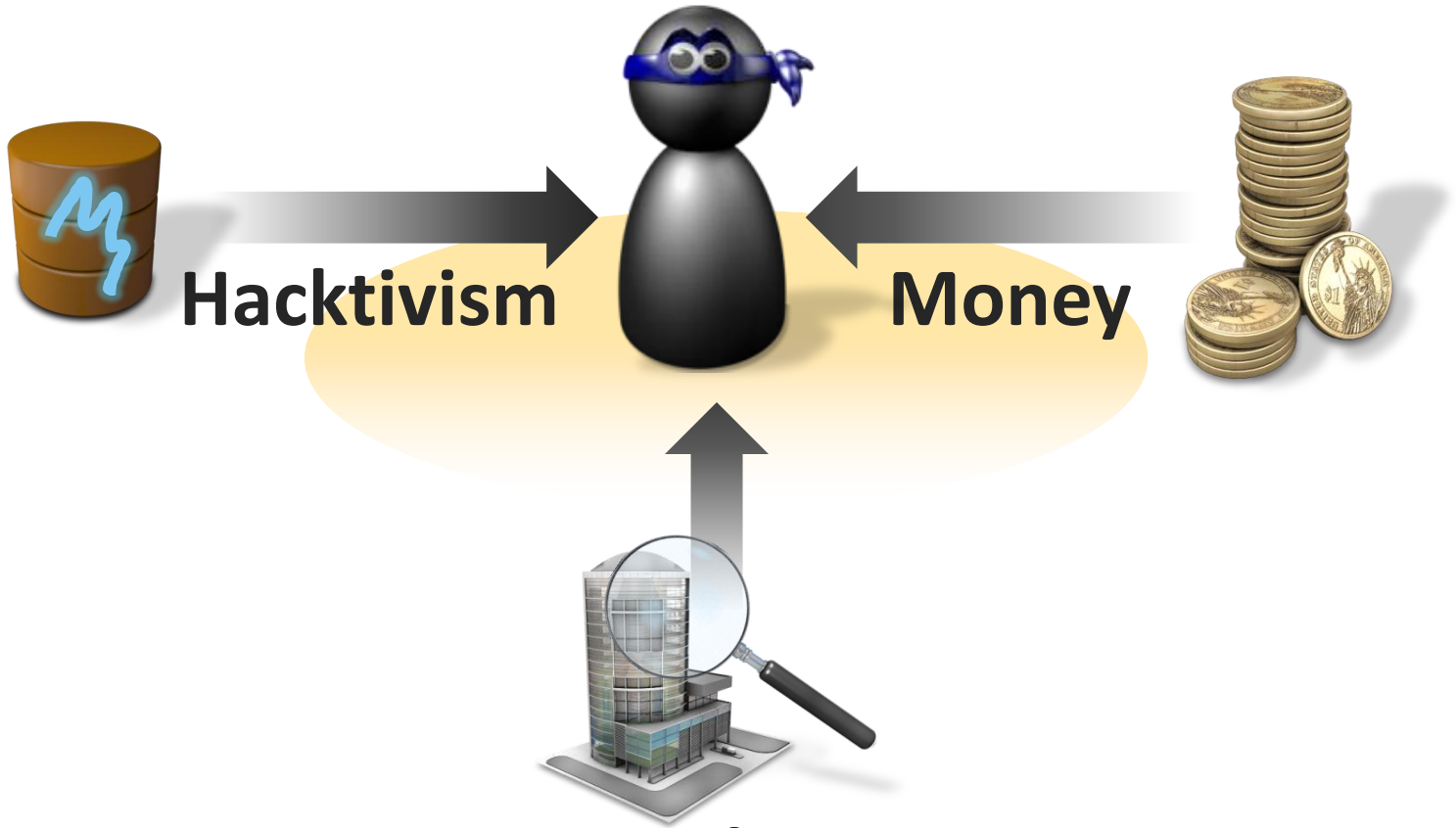
5.5 Billion attacks blocked in 2011



1.7 Million new malware variants / day

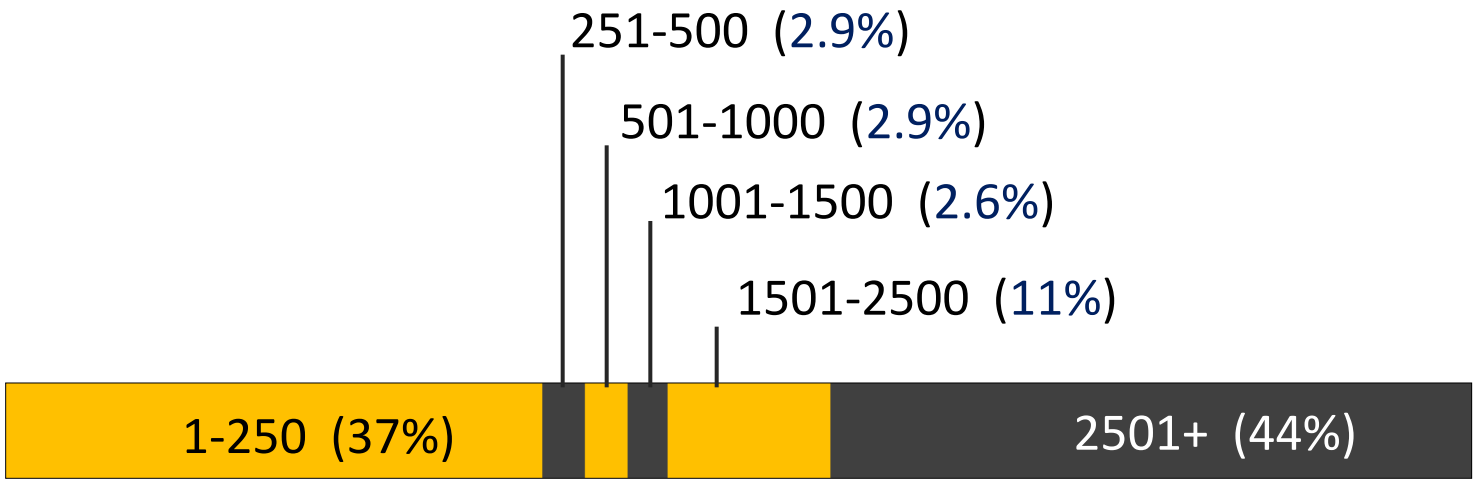
Targeted attacks come on top

Different motives - Different attacks



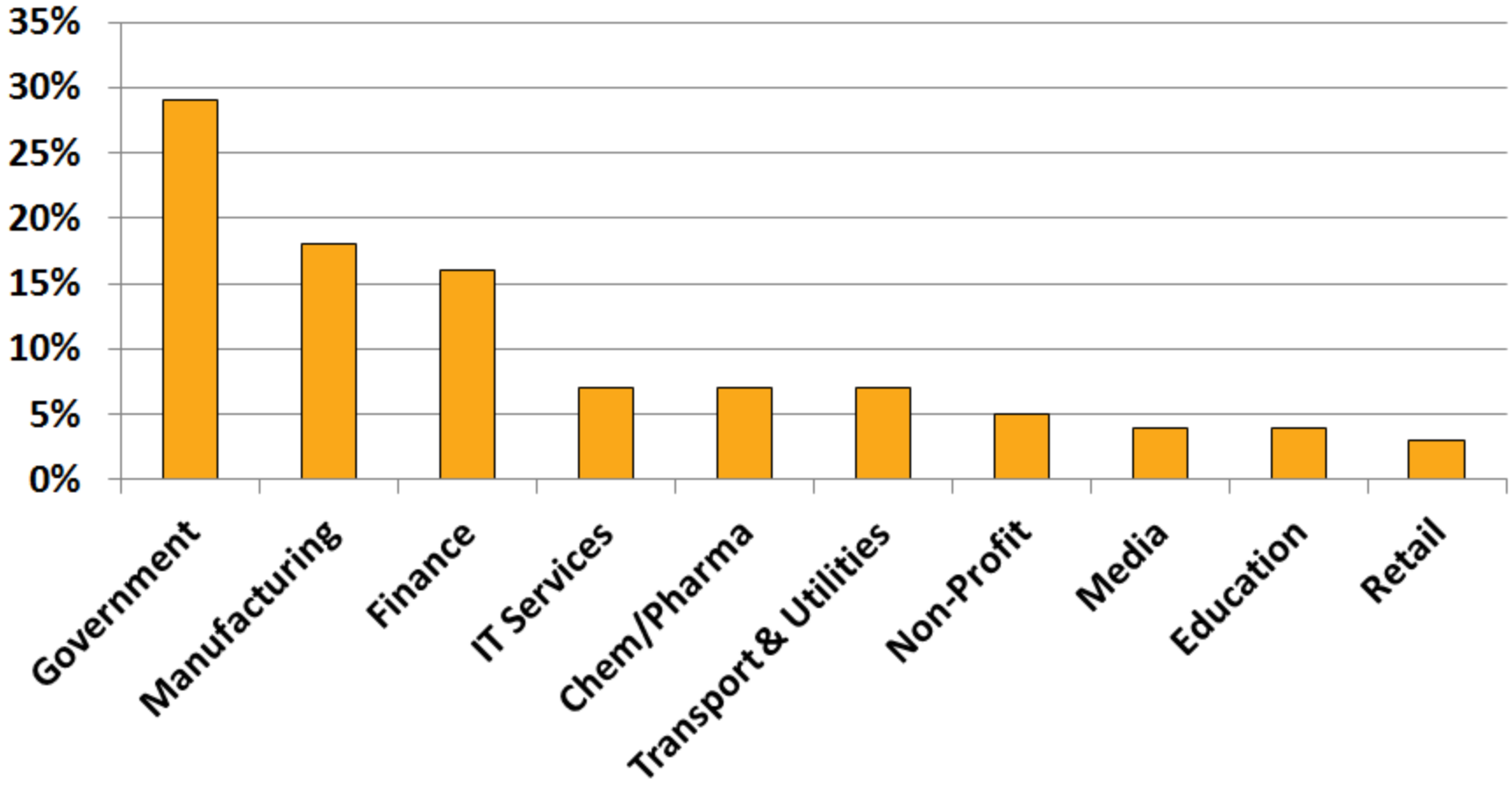
Size does (not) matter

- Small businesses are often not well protected
- but connected to others, used as stepping stones



Number of employees of the targeted company

Targeted attacks by sector



Source: Symantec ISTR 17

Phases of targeted attacks

- Reconnaissance
- Incursion
- Discovery
- Capture
- Exfiltration

Reconnaissance

Reconnaissance

Find data on possible targets for attack preparation

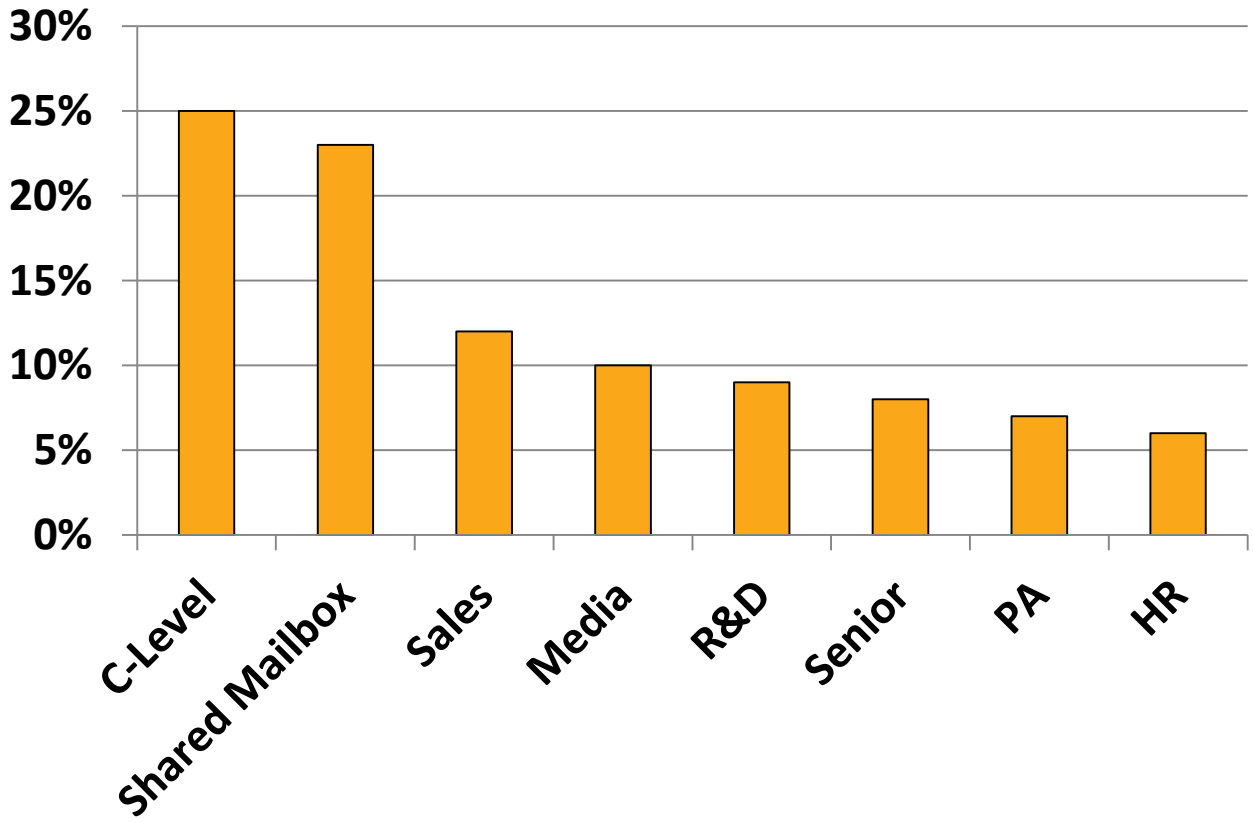
- Social networks are a gold mine
  - Befriend someone, learn what they want
  - Well-meaning employee post & click a lot

The attackers know the key people and know which protection you have deployed

Protection: User awareness, social media policy

Targeted attacks by targeted person

- Not only CEOs are targeted



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Incursion

Incursion

The actual „hack“ or break in

- Often combination of social engineering and (zero-day) vulnerability
- Use framework for automation
- Smaller campaigns over a long time period

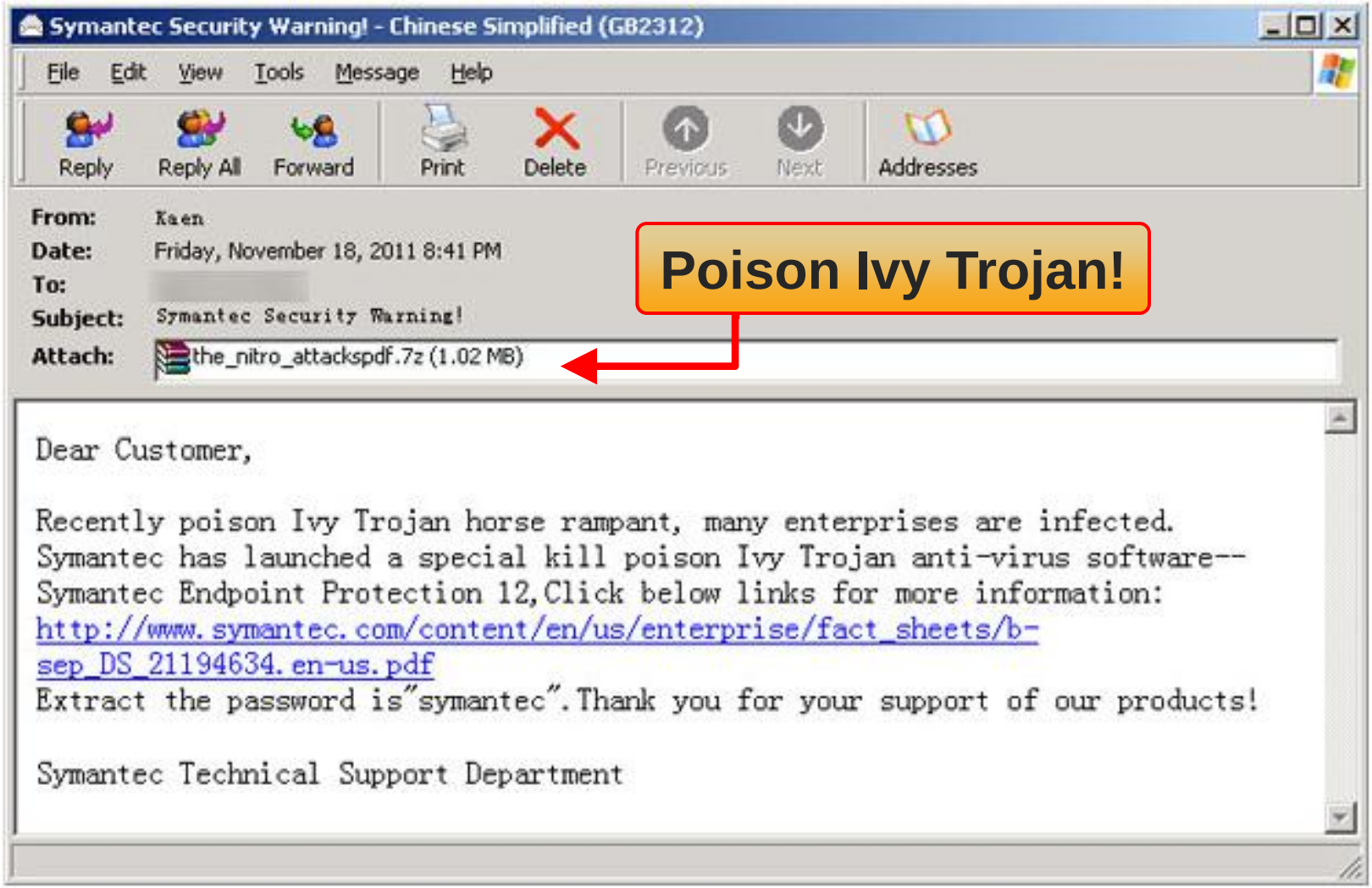
Protection: Intelligence, SIM, critical system protection, AntiSpam, AV,…

The two most common methods

- **Spear Phishing**
  - Send a few emails to persons of interest
  - Add malicious attachment or link to exploit

- **Watering Hole Attacks**
  - Infect a Website of interest to the target user base
  - Wait for them to get infected and filter others out

Nitro gang has a sense of humor



Incursion: Examples

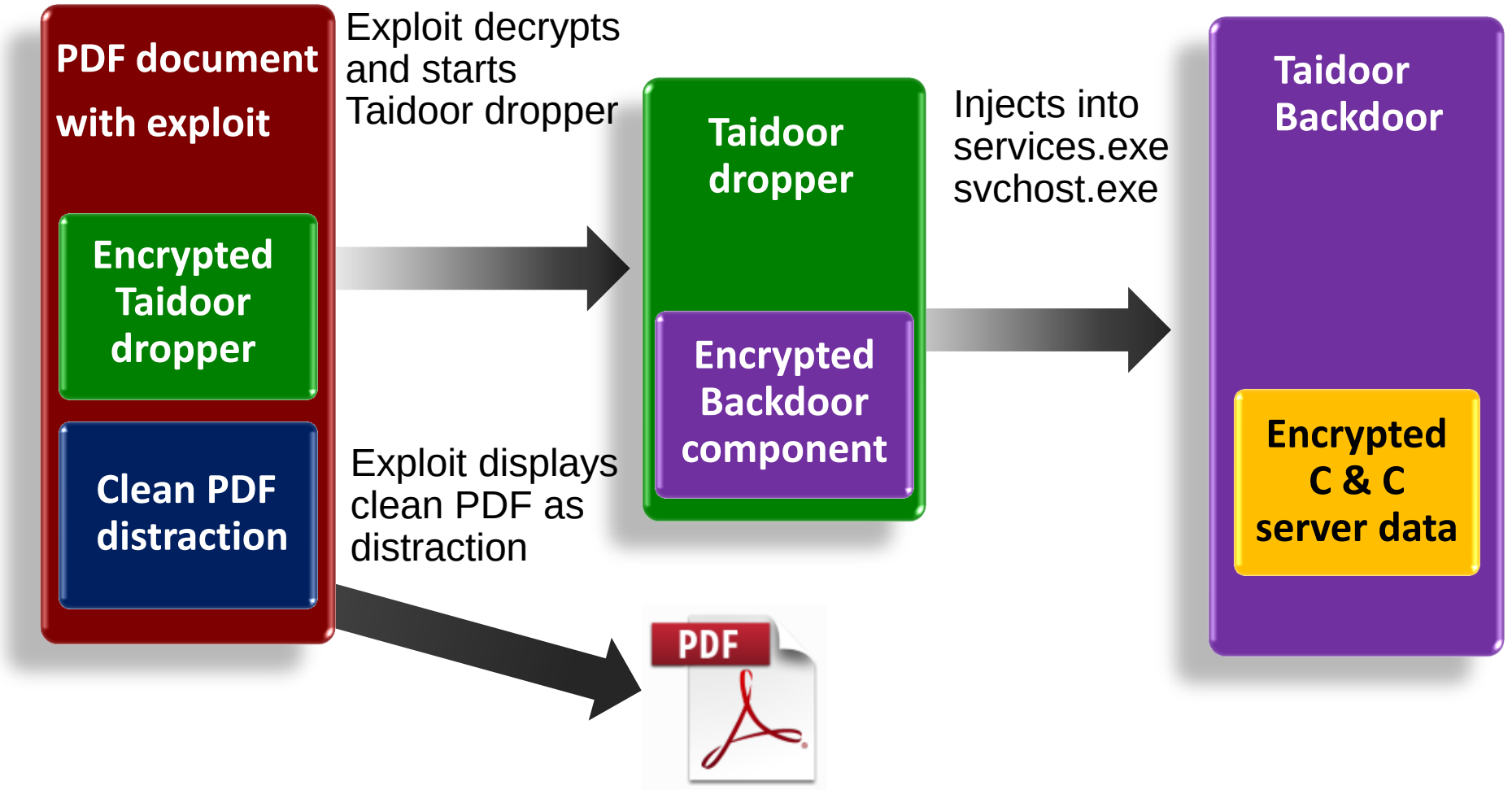
Method used:	Elderwood	Taidoor	Stuxnet	Nitro	Duqu	Lucky Cat
Emails with exploit document	0-day	✓		0-day	0-day	✓
Website with exploit	0-day			(0-day)		
USB stick			0-day			

Incursion: Malware used

- The malware used is not always sophisticated!
  - Common malware can be as sophisticated
- Updated over the time of operation
- Some use stolen certificate to sign it

Malware used in simple attacks:	Attack:
• Poison Ivy – public Remote Access Trojan	Nitro
• Poison Ivy – public Remote Access Trojan	RSA breach
• VBS.Sojax – simple backdoor	Lucky Cat
• Taidoor – simple HTTP backdoor	Taidoor

Foothold: Infection with Trojan.Taidoor

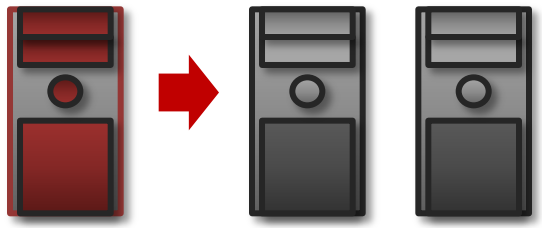


Discovery

Discovery

Expand foothold at target - searching for the data

- Plan next steps / next local infections
- May depend on commands from C&C server
- Use stolen credentials / information



Protection: IPS, strong authentication, SIM, segmentation

Manual Discovery: Example Taidoor

- We recorded interactive sessions with honeypots

Commands received by Taidoor

[Ping]
[Set sleep interval to 1 second]
cmd /c net start
cmd /c dir c:\docume~1\
cmd /c dir "c:\docume~1\<CurrentUser>\recent" /od
cmd /c dir c:\progra~1\
cmd /c dir "c:\docume~1\<CurrentUser>\desktop" /od
cmd /c netstat –n
cmd /c net use

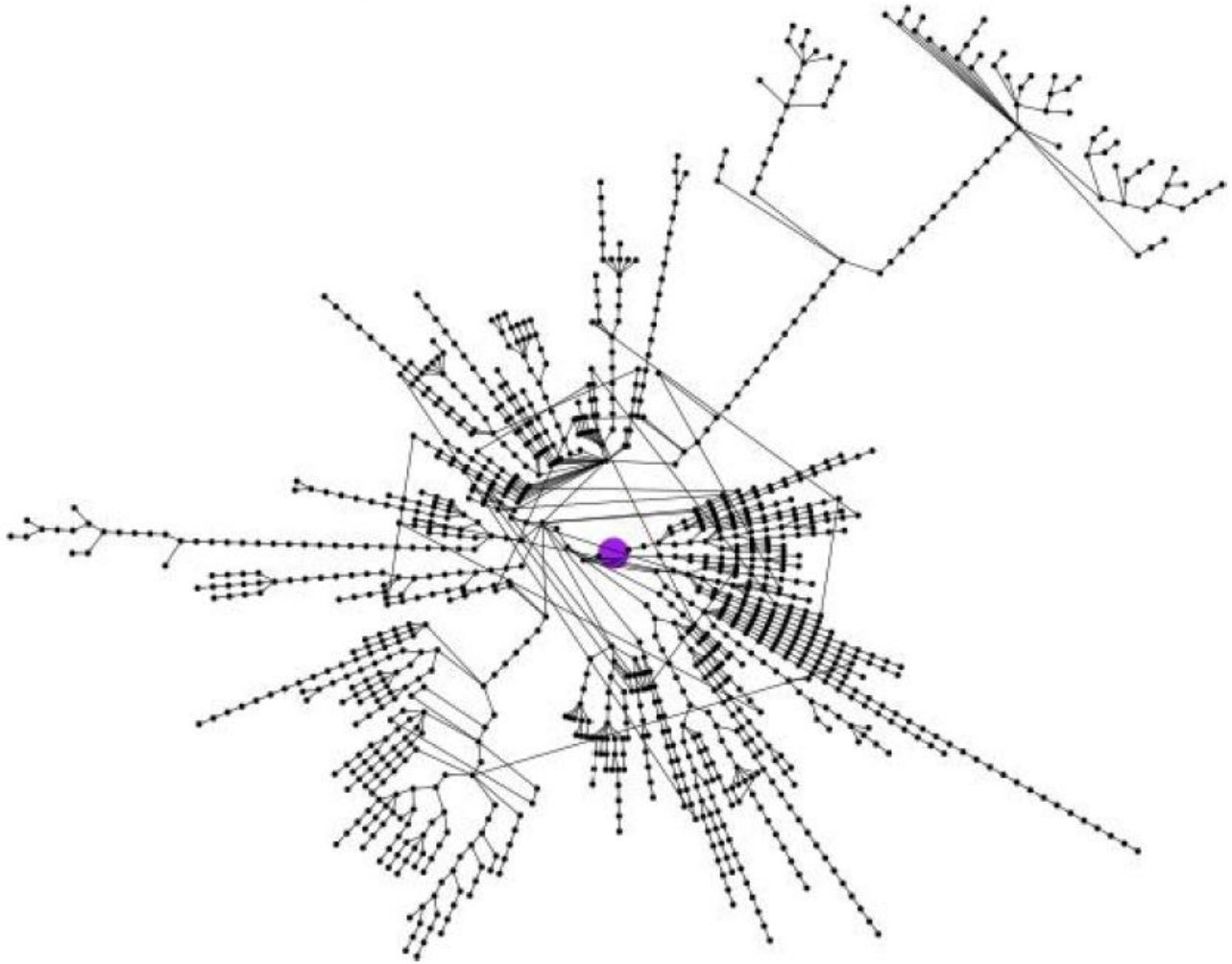
Manual Discovery: Example Sykipot

- They know what they are looking for

Commands received by Sykipot

```
ipconfig /all
netstat –ano
net start
net group "domain admins" /domain
tasklist /v
dir c:\*.url /s
dir c:\*.pdf /s
dir c:\*.doc /s
net localgroup administrators
type c:\boot.ini
systeminfo
```

Stuxnet propagation after one initial infection



Capture

Capture

Grab the interesting data

- Can happen over years
- Gathered in central place or multiple locations
  - Obfuscate and/or encrypt
- Database & fileservers are a common target

Protection: ACL & DLP can help protect your critical information

Capture: Example Flamer

- Steals everything and more
  - Documents, images, phone synchronizations, voice recordings, Bluetooth data, screenshots, credentials, ...
- Filter on metadata, GPS, creation date, …
- Stored encrypted on:
  - Local SQLight database
  - Files in %Temp% folder
  - Hidden on USB stick

Exfiltration

Exfiltration

Send the stolen information back to the attacker

- Drop server either rented, hacked or free hoster
- “smash & grab” attacks, if detection is likely

- Asymmetric encryption & SSH vs. HTTP posts
  - Both work, HTTP is often less suspicious

Protection: Filter outbound traffic, firewall, IPS, DLP, proxies

Exfiltration: Examples

- Most try it with HTTP posts (proxy aware)

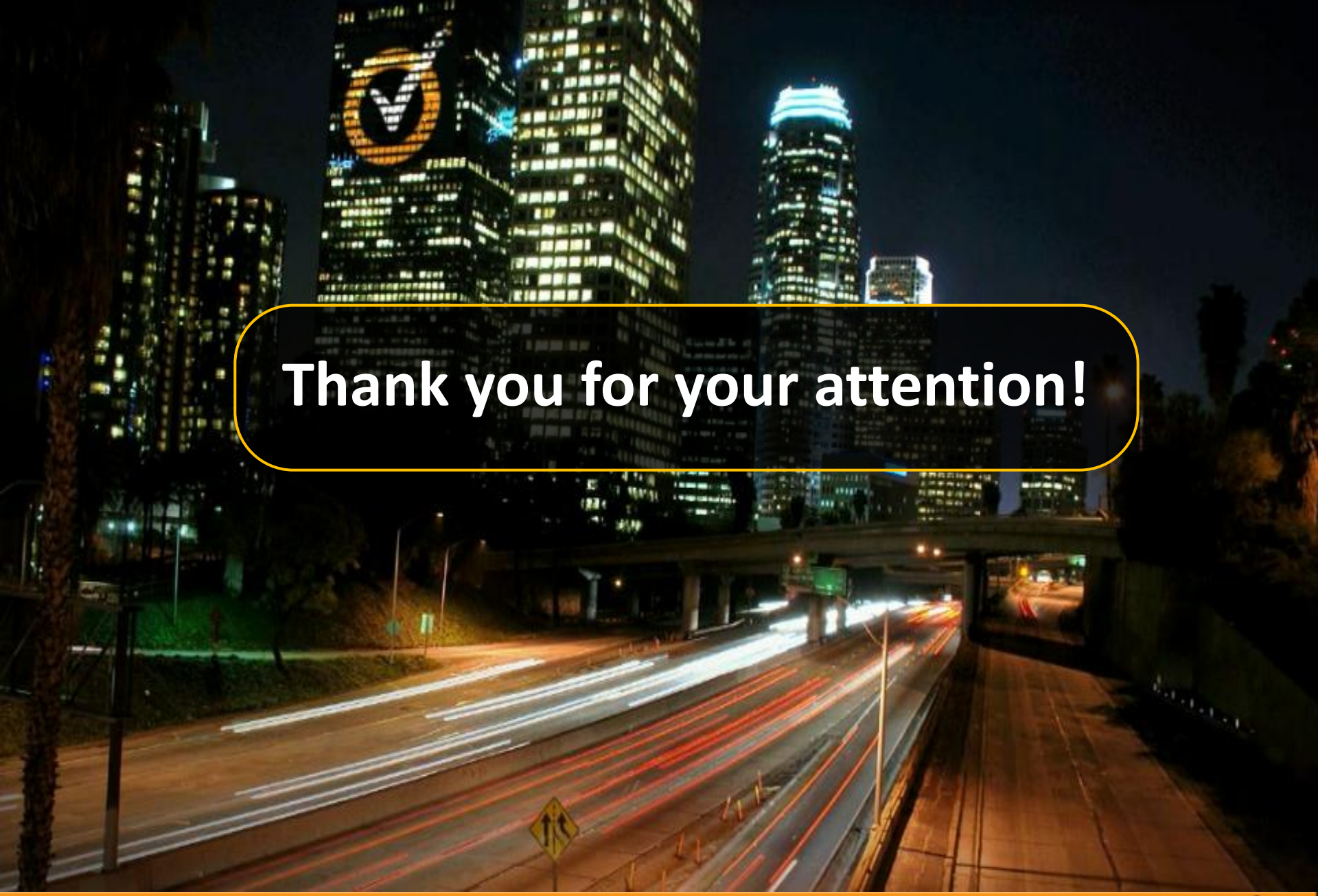
Method used for exfiltration:	Attack:
• HTTP post with RC4 encrypted data	Taidoor
• HTTP/S post of JPEG with AES encryped data	Duqu
• HTTP with OneTimePad XOR data	Stuxnet
• HTTP post of compressed .cab files	Lucky Cat

How to Apply What You Have Learned Today

- Verify where your critical data is stored
- Verify who can access that data
- Verify that you are able to detect data extraction
- Add this scenario to your response plan

Summary

- Targeted attacks do happen!
- Not all attacks are sophisticated, but they are dangerous as well
- Stolen data can be used to prepare further attacks
- You need defense in depth


Thank you for your attention!