Schrödinger's RAT: Profiling the Stakeholders in the Remote Access Trojan Ecosystem

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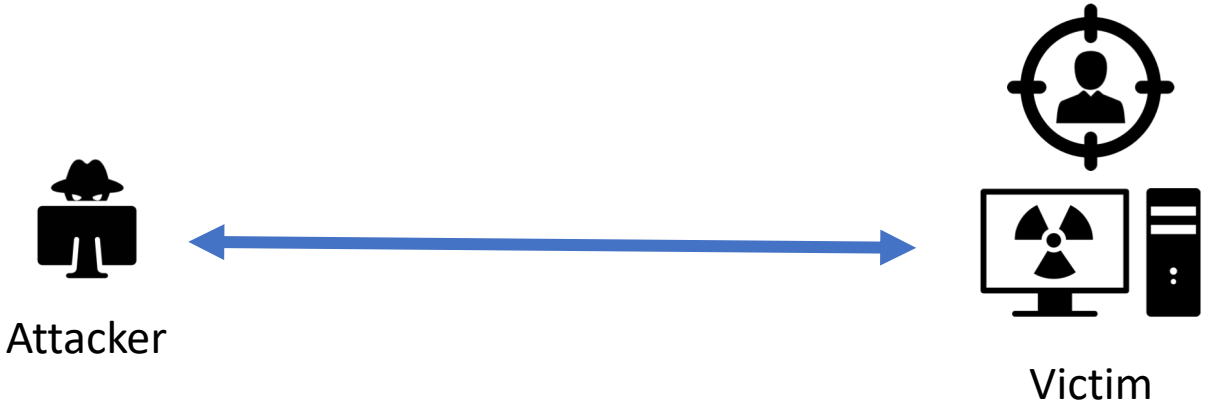
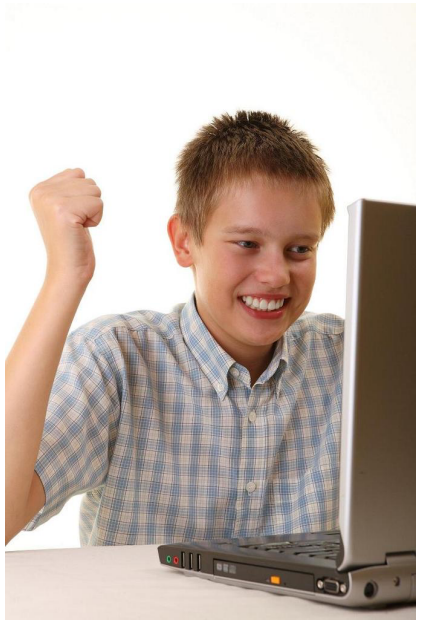
RAT: Remote Access Trojan



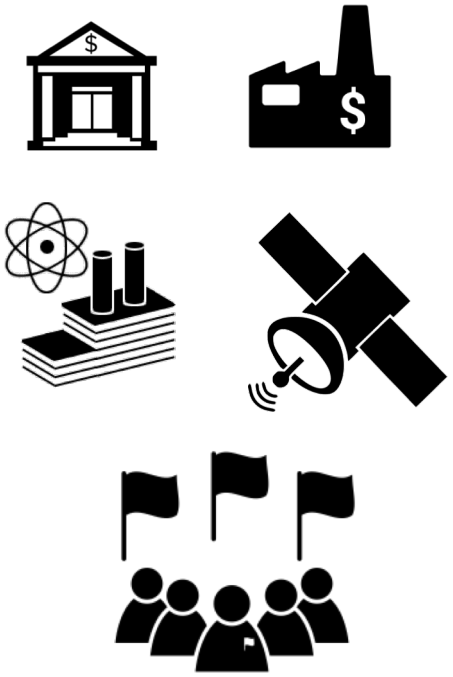
RAT: Attackers

Script Kiddies

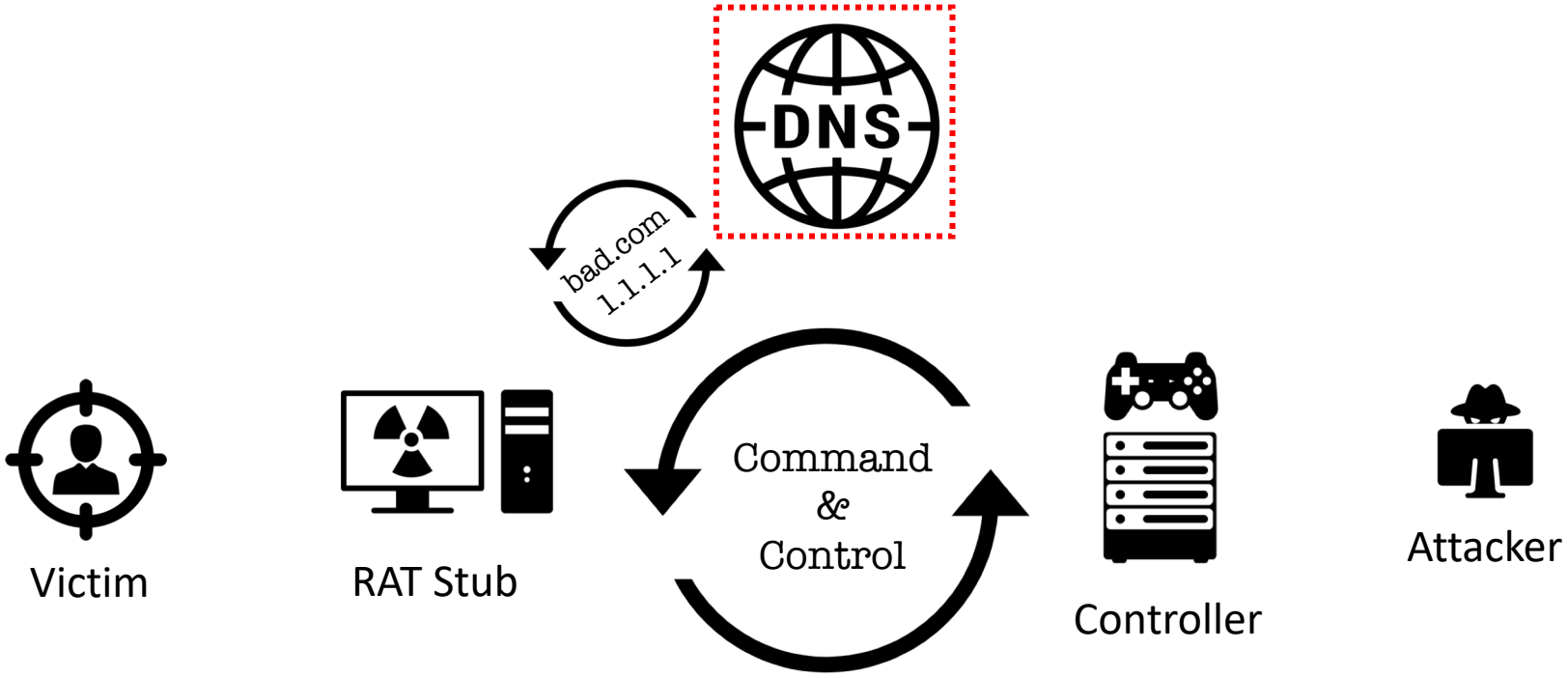


Blackmailers / Voyeurs

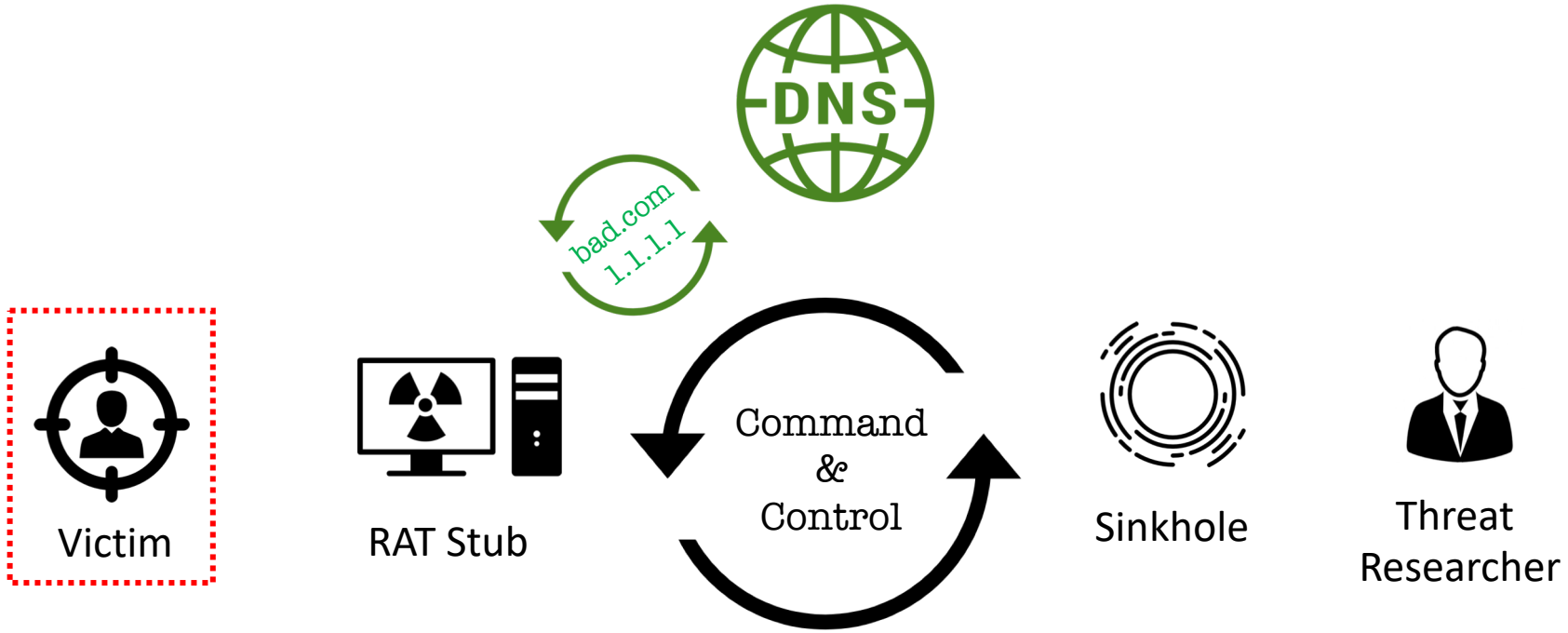
Nation State



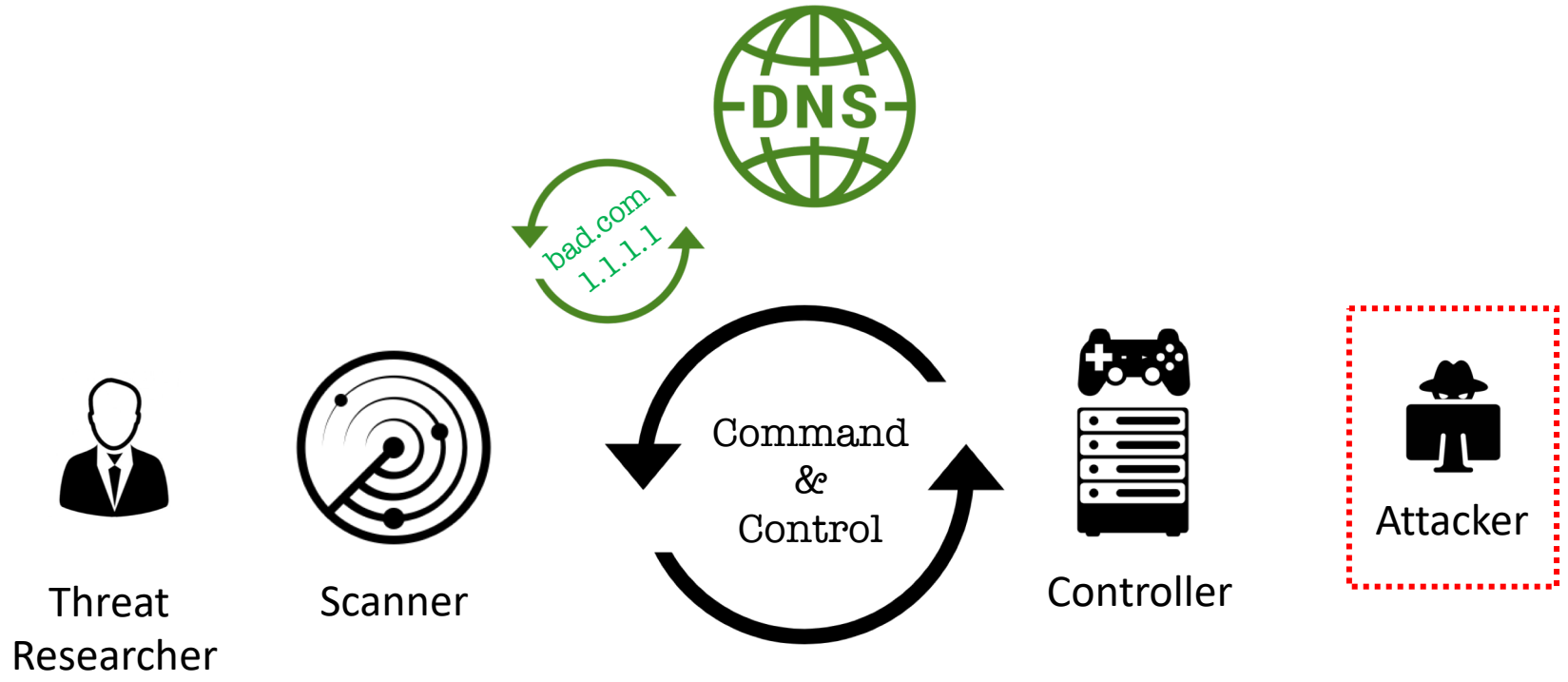
RAT: Basic Operation



RAT: Sinkholing

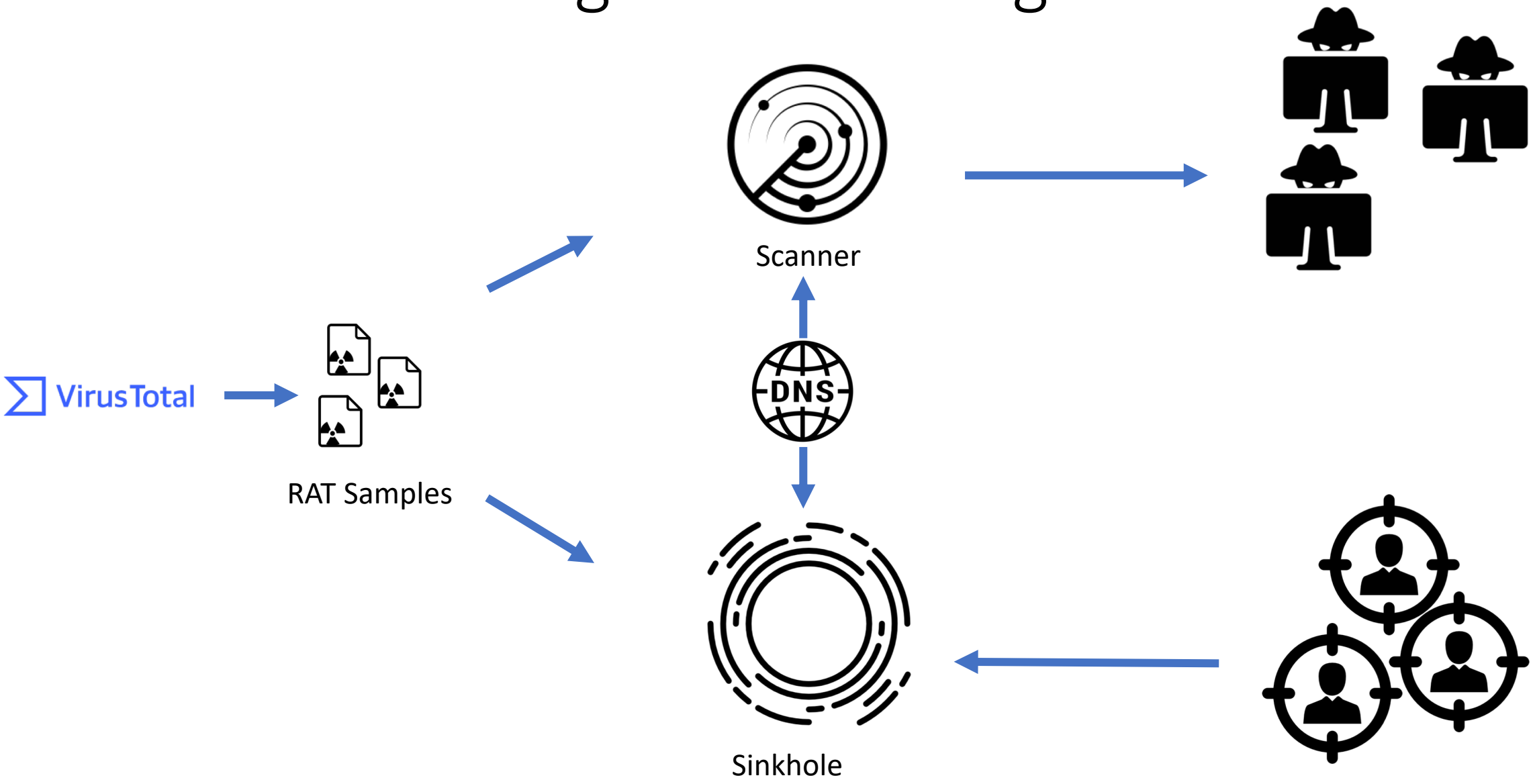


RAT: Scanning

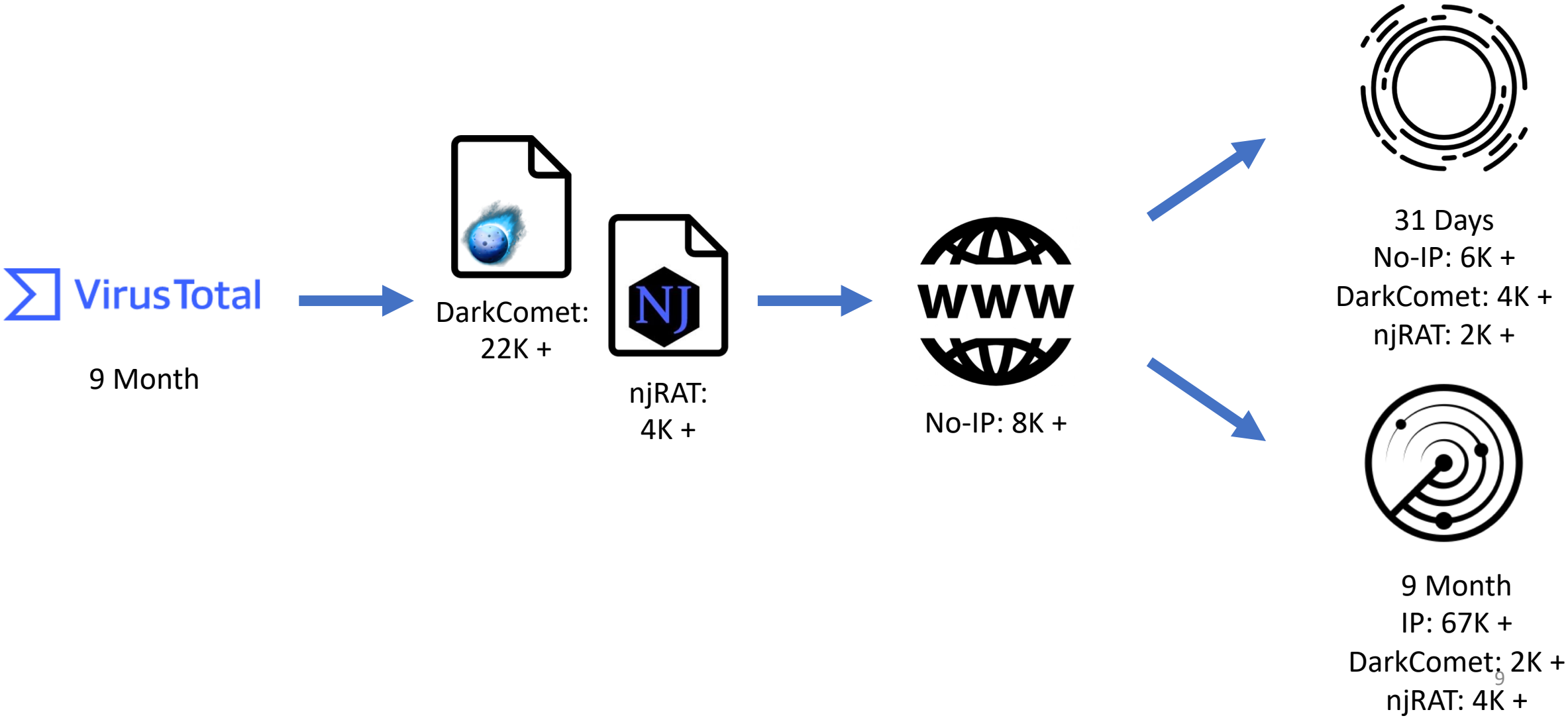


RAT Harms

Naïve Sinkholing and Scanning



Studying RAT Ecosystem: Data Set

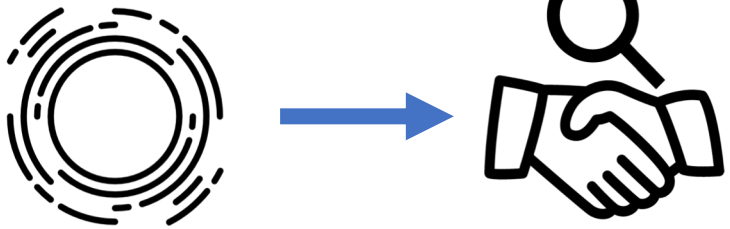


To Whom It May Concern,

I am reaching out again to inform you that it appears that a vast majority of your servers, that are externally accessible, appear to contain evidence of malware installed that appears to be active and beaconing/communicating externally. The same website mentioned below in my previous email shows that 676 IPs that are registered to your University are potentially affected. I have attached screenshots of the results that are returned from shodan.io, but I would suggest that you or someone visit the site and check for yourself. The site is a well-known IoT scanner and is used by pen testers and Info Sec professionals alike. The site can be accessed at https://www.shodan.io. Once there perform a search for "category:malware". Once those results are returned, click on the "United States" under the "Top Countries" section on the left. As of this writing, George Mason University had the largest count of potentially infected IPs.

So far, it only appears that the RAT identified on all IPs is the NjRAT Trojan. I know that I don't have the familiarity of your network, however, this is something that should be looked into as this is only the surface. This could become a larger issues has the layers are pulled back.

RAT-Hole: Initial Handshake Analysis



31 Days:
Conn: 153M +
~~IP: 828K +~~

Initial Handshake Analysis:
IP: **12K +**

Unknown Or
Scanner: 816K +

RAT-Hole: Protocol Analysis

31 Days:
Conn: 153M +
~~IP: 828K +~~

Initial Handshake Analysis:
~~IP: 12K +~~

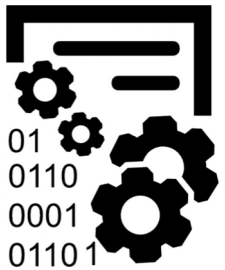
Unknown Or Scanner: 816K +

Protocol Analysis:

IP: **7K +**

RAT Scanner: 5K +

RAT-Hole: Behavioral Analysis



31 Days:
Conn: 153M +
~~IP: 828K +~~

Initial Handshake Analysis:
~~IP: 12K +~~

Unknown Or Scanner: 816K +

Protocol Analysis:
~~IP: 7K +~~

RAT Scanner: 5K +

Behavioral Analysis:
Victim: **6K +**

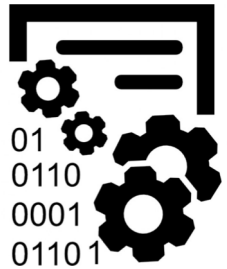
Sandbox: 1K +

RAT-Hole: Fingerprint Analysis

31 Days:
Conn: 153M +
~~IP: 828K +~~

Initial Handshake Analysis:
~~IP: 12K +~~

Unknown Or
Scanner: 816K +



Protocol Analysis:
~~IP: 7K +~~

RAT Scanner: 5K +

Behavioral Analysis:
~~Victim: 6K +~~

Sandbox: 1K +

Fingerprint Analysis:
Victim: **3K +**

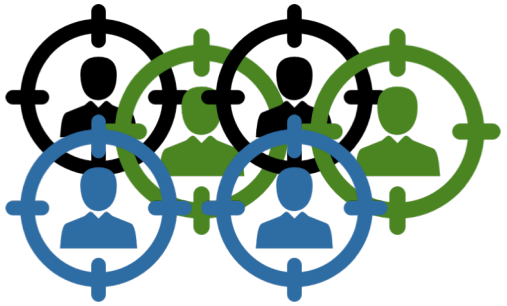
Victim Analysis: Domains and Victims

Domain: 975

Single Victim: 43%

20 Victims: 90%

100> Victims: 3



Victim Analysis: Infection Longevity

- NO-IP Domains automatically expire after **30 days**
- 10% of Domains yielded Victims **150 days** after expiration
- Danger of domain **recycling**

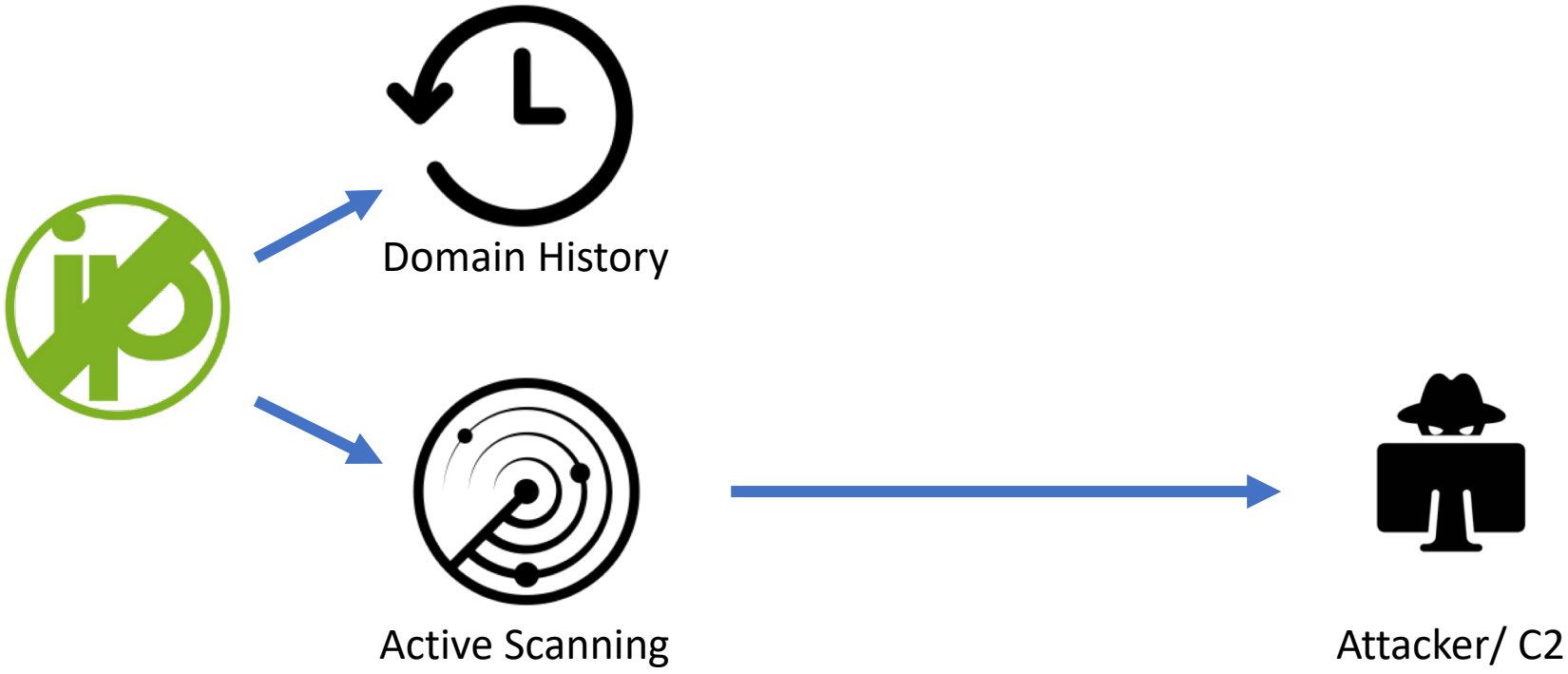
Victim Analysis: Geolocation

Brazil:
DarkComet: 1K +
njRAT: 178

Egypt:
njRAT: 94

Turkey:
DarkComet: 130

RAT-SCAN: Measuring the Attackers

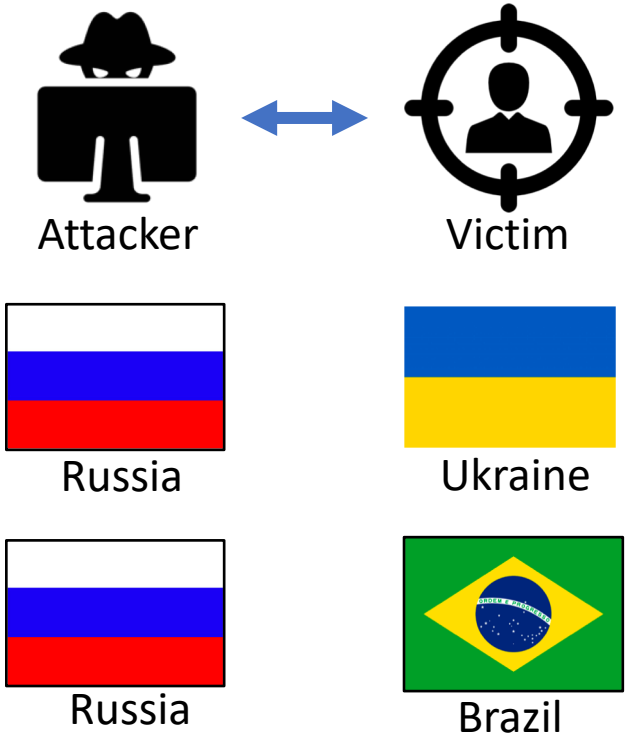


IPjetable

RELAXKS

40+%

Who Attacks Who?



Take-aways:

- There are other **Stakeholders** in RAT ecosystem

- You need methods to remove **Intelligence pollution** (~98%), Otherwise conclusions are meaningless!

- There is RAT campaign **aftermath**


Q&A