The DNS Abuse Institute

Malicious Domains: Where they are, and what we can do about them

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What we want you to leave with

- A better understanding of the DNS industry
- To know the difference between malicious and compromised domains, and why it's important
- An understanding of the distribution of abuse across the ecosystem
- To know how to report malicious domains

Overview

- About the DNSAI
- What is DNS Abuse?
- Malicious vs. Compromised
- The Domain Name Industry
- Where are abusive domains concentrated?
- How do we reduce abuse?
- How to report abusive names

About the DNSAI

- A project of Public Interest Registry (.org)
- Launched in 2021
- Education, Collaboration, Innovation
- Solving the collective action problem

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What is DNS Abuse?

Definitions range from narrow:

- Malware, botnets, pharming, phishing, (spam)

To broad:

- Anything bad on the Internet that uses a domain name

And can differ between using the DNS for abuse, and abusing the DNS, or both

Consensus Definition

Technical harms appropriately resolved at the DNS

- Phishing
- Malware
- Botnets
- Pharming
- Spam*

*when used as a delivery mechanism

Malicious vs. Compromised

- **Malicious**: a domain registered for malicious purposes (i.e., to carry out DNS Abuse).
- **Compromised**: A benign domain name that has been compromised at the website, hosting, or DNS level.

Mal vs. Comp Cont.

- Relatively recent development within domain registration community
- Growing understanding and sophistication of what layer should deal with what harms

The Domain Name Industry

- ~2500 ICANN accredited Registrars, ~500 corporate families
- ~1500 Top level domains,
  - ~1250 generics: .org, .com, .horse,
  - ~250 country codes: .au, .ca, .de
- Primarily managed by contract

Economic Context

- High volume
- Low cost
- Globally competitive market
- Registrar owns customer relationship - mitigation typically belongs here (instead of the TLD level)

Measuring DNS Abuse

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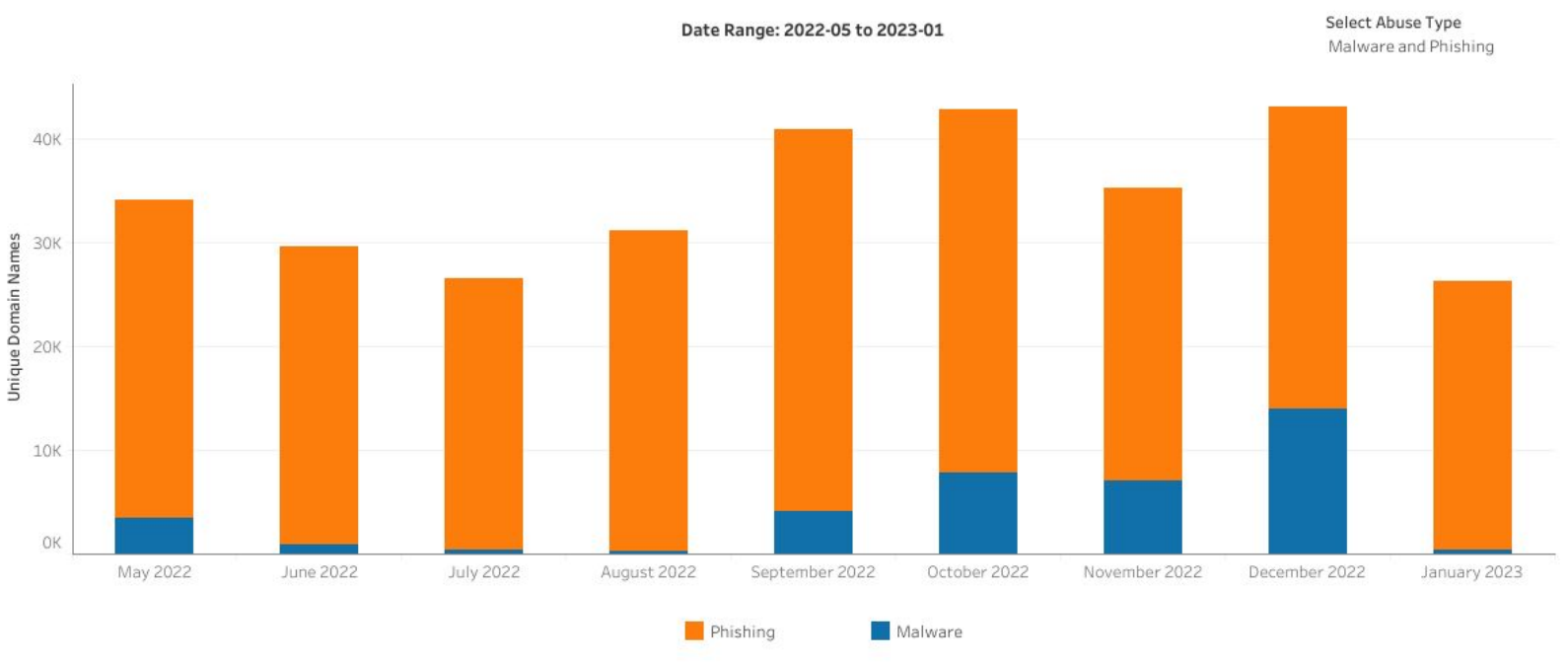
~~Ballpark~~Cricket Pitch Figures

ICANN's DAAR counts 658,774 abusive domains on 216,178,426 total, or 0.3%

- Approx 76% of that is spam
- Leaving ~155,000 for malware, phishing, botnets (0.07%)

Trends in Abusive Names



https://dnsabuseinstitute.org/dnsai-compass/

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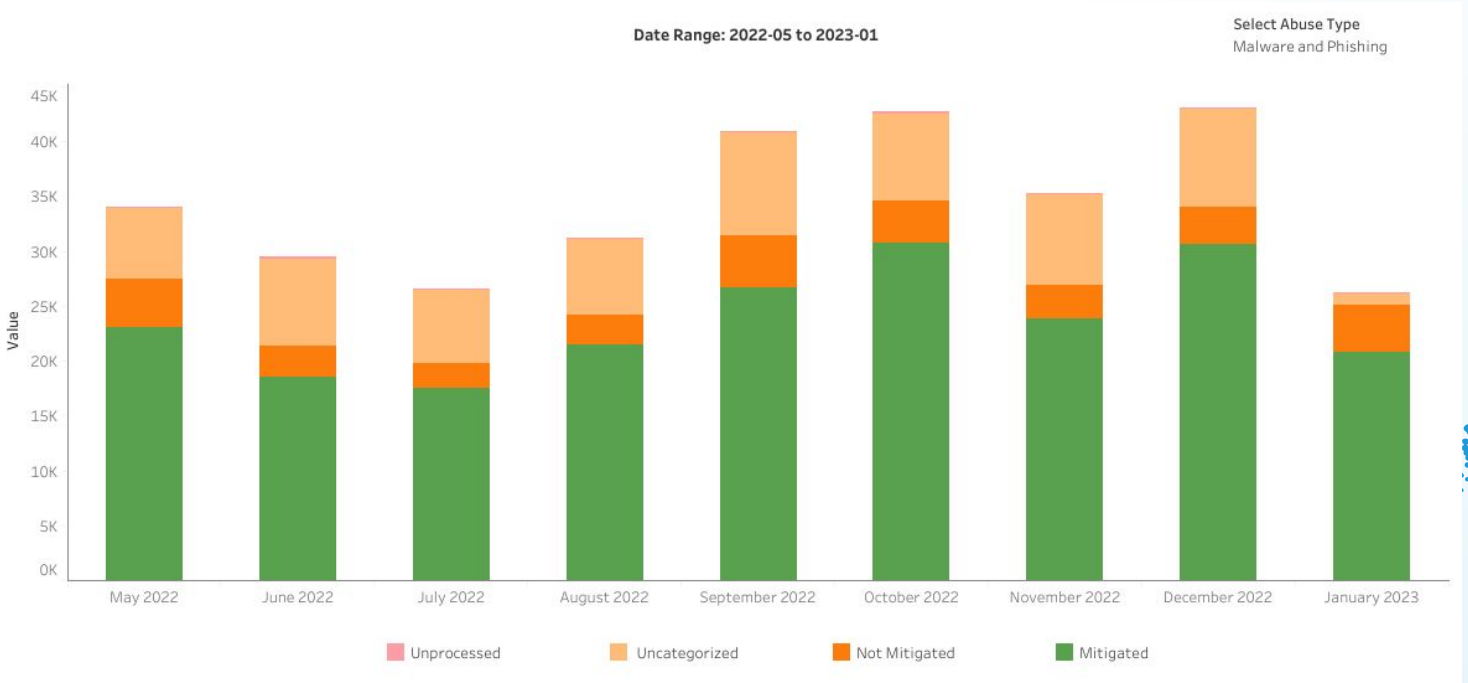

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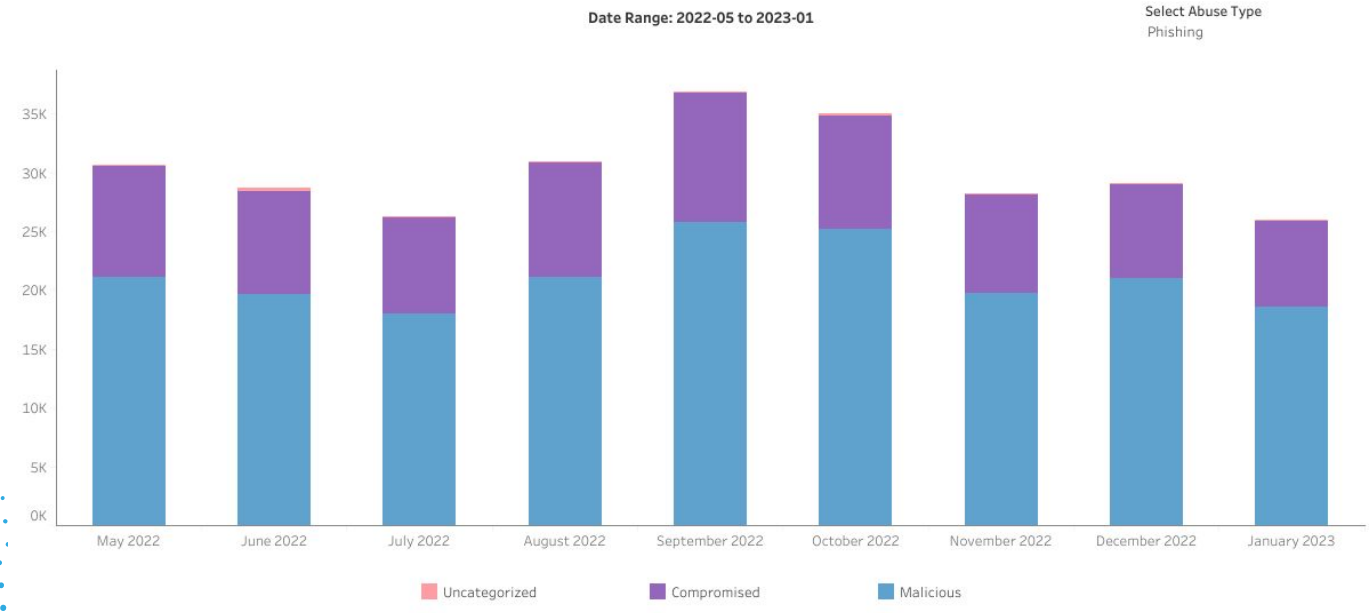
Malicious vs. Compromised



- Typically **~70%** of **phishing** is malicious

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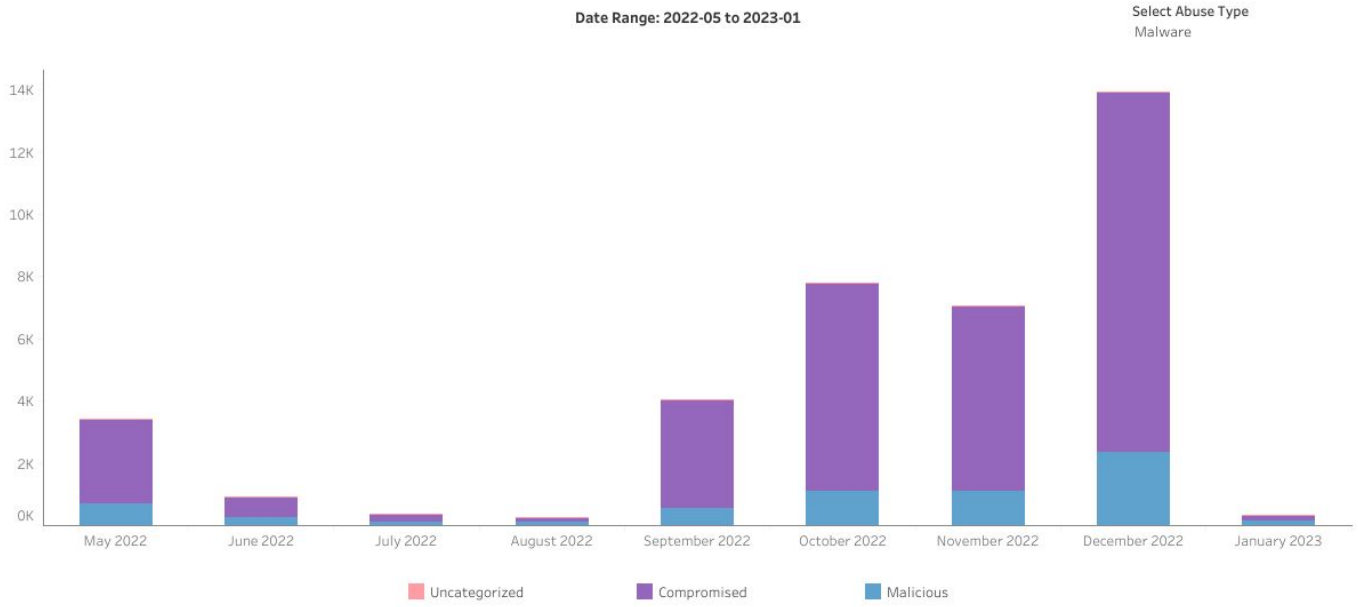
Malicious vs. Compromised



- Typically **~14-20%** of **malware** is malicious
- Higher in low volume months

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Phishing and Malware

- Beginning to understand trends over time
  - Malware varies in volume, low rates of malicious registrations
  - Phishing is more stable, higher rates of malicious registrations
- Abuse is not evenly distributed across the ecosystem

Where is abuse concentrated?

Group 1: High volume, high growth registrars:

- Size and business model results in high raw volumes of malicious registration
- Tend to be low on abuse per 100K
- Generally high levels of mitigation
- Most have fast mitigation times

Jan 2023: ~26 RRs, 75% malicious registrations

How can we improve?

Group 1: High volume, high growth registrars:

- Preventative action
- Marginal gains on mitigation rates
- For some, speeding up mitigation

Where is abuse concentrated?

Group 2: Handful of smallish, outliers:

- High malicious domains per 100K
- High rates of new malicious registrations
- Typically unengaged in industry events

January 2023: ~ 6, 10% malicious registrations

How can we improve?

Group 2: Handful of smallish, outliers:

- Active outreach
- Sharing information
- Improvements in policies and processes
- Raising of the ‘floor’ of contractual expectations

Meaning

- Tackling these two groups and their specific areas for improvement, focuses us on about **85% of the malicious registrations**

Other ways to improve

Compromised registrations

- Engagement from hosting providers & wider industry
- Education of end users
- General cyber security hygiene: updates, patching, password

Other ways to improve

Top Level Domains

- Managing RR channel
- Policies & Processes
- Incentive schemes?

What can you do?

- Prevent Compromise
- Report Abuse
- Educate end users

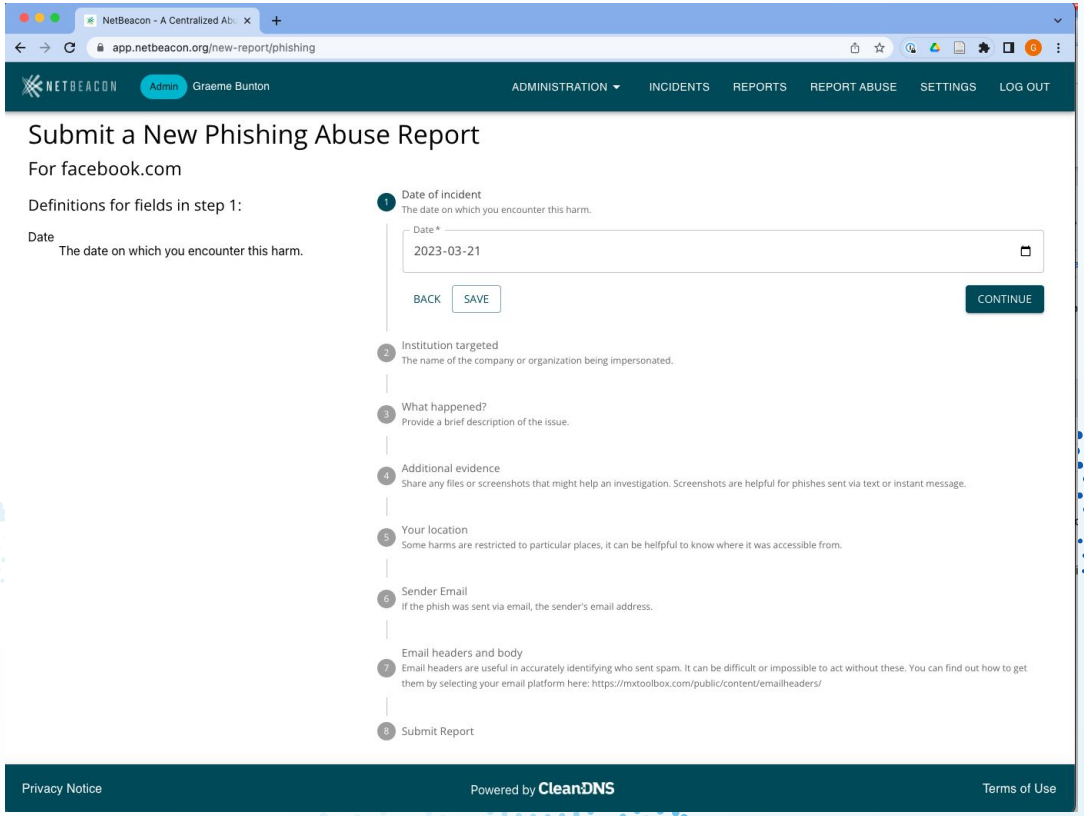
How to Report Abuse

NETBEACON

Netbeacon.org

- Centralized abuse reporting system
- Simplified, structured abuse reporting
- Easy for reporters
- Better for recipients
- FREE

- Enriches reports
- APIs for reporting at scale
- Expanding to hosts & ccTLDs



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Education

Share our Best Practices:

- Secure Your Website, Save the Internet
- Making Phishing Reports Useful
- Generic Abuse Policy

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Questions?

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