Passive Reconnaissance

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#Cyber-Security

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Passive Reconnaissance Theory

Passive Reconnaissance in a Nutshell

- **Passive Reconnaissance** is the art of gathering information about a target, without them even realizing
- **Passive Reconnaissance** is also called OSINT(Open Source INTelligence), since it relies on open sources for the whole process
  - Open Sources is not used in context of coding, but rather view it as publicly accessible resources, which by itself, can include code repositories
  - More about that later

Passive Reconnaissance in a Nutshell

- **Passive Reconnaissance** is usually the very first step of the real engagements and operations
  - This is used for building up target context (domains, DNS map, live hosts, whois records, publicly available files, code and more)
- **Passive Reconnaissance** is requiring thinking outside of the box
  It is extremely safe, since if done right, the target is unaware

Passive Reconnaissance Techniques

Prepare your notes

Scanning DNS

- Scanning DNS is one of the first things to do while performing **OSINT**
- DNS enumeration is essential, since it returns useful information about the target's Live hosts and it's **DNS records**
- This most usually include information about the target's mail servers, custom dns servers, workstations, web servers and more
- By peeking at the **DNS**, we can obtain information about the target's infrastructure context
- There are attacks that relies on **DNS**, but we are focused in enumerating for now

What is DNS?

- **DNS** (**Domain Name Resolution**) is a protocol which is designed to map specific IP address to specific string
- For example: facebook.com -> 157.240.9.35
- Ok, but, Why? Because it is easier for us humans to remember facebook.com instead of it's representative IP address
- There are global **DNS servers**, like 8.8.8.8, but also everyone can implement their own
- Your router acts as a **DNS server** as well
- In most of the organizations using **Windows**, the **Domain Controller** is also DNS server

What is DNS Record?

- This is the building block of the DNS protocol
- You do not need to remember all of them, but the important ones are:
  - **A** (This is used for mapping string to IPv4 address)
  - **AAAA** (This is used for mapping string to IPv6 address)
  - **CNAME** (This is pointer to another domain, instead of an IP)
  - **NS** (This specifies authoritative DNS servers, which servers the browser should request)
  - **MX** (This points to the mail servers of given domain)
  - **TXT** (This records allows the owner of the domain to store text, some C2 frameworks are using that field to exfiltrate commands, evading security controls)

Stalking Social Media

- If the project is phishing related, the very best place to start is to stalk the target on social media (**Facebook**, **Instagram**, **Twitter**, **Tiktok**)
- This can also be applied for pentesting / red teaming, if you can extract something useful from employees social media, you can craft more complex attacks or wordlists
- See if the target's profiles are open

Stalking Social Media

- See if there is useful information inside
- Gather everything:
  - Favorite places
  - Friends
  - Tags
  - Profile Feed
  - Pretty much everything you can

Enumerating Usernames / Emails

- It is always a good idea to have a list of valid (if possible to verify) list of **usernames** / **email addresses**
- This can lead:
  - Password spraying
  - Phishing
  - Privilege Escalation
  - Many more …

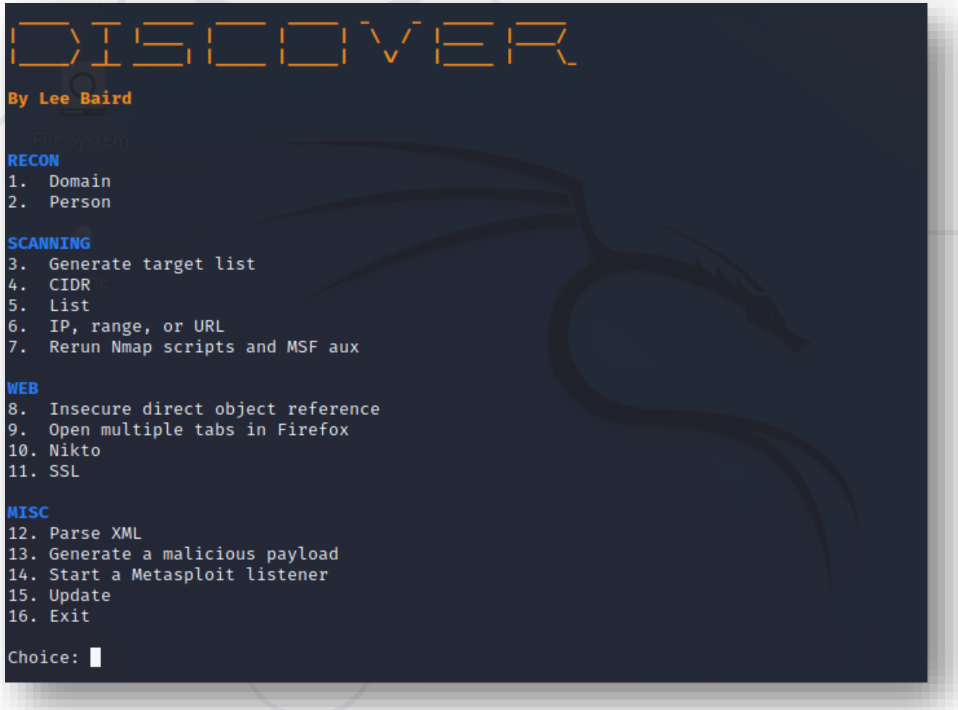
Enumerating Publicly Available Resources

- The idea here is simple, enumerate:
  - Code repositories
  - Files
  - Pastebins
  - Credentials
  - SSH keys
  - Pretty much everything that can be enumerated

Passive Reconnaissance Tools

Discover (All in one)

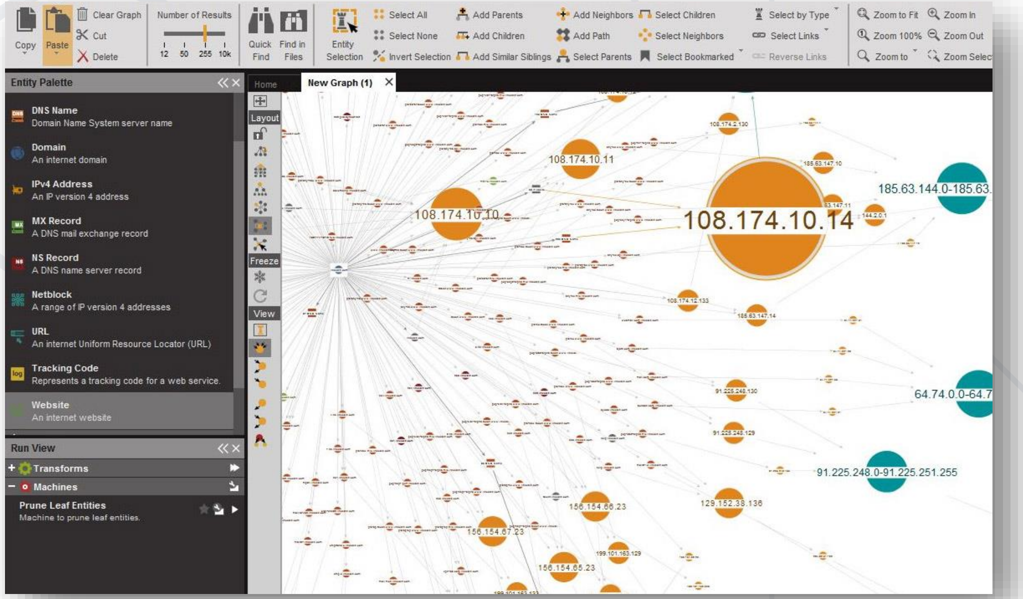
- Discover (https://github.com/leebaird/discover) is combining tools like recon-ng, amass and DNSdumbster in one, outputting .html report
- It is preoptimized and I recommend using it. It has access to various of tools, most of them requires an API key, which can be paid



```
By Lee Baird

RECON
1.  Domain
2.  Person

SCANNING
3.  Generate target list
4.  CIDR
5.  List
6.  IP, range, or URL
7.  Rerun Nmap scripts and MSF aux

WEB
8.  Insecure direct object reference
9.  Open multiple tabs in Firefox
10. Nikto
11. SSL

MISC
12. Parse XML
13. Generate a malicious payload
14. Start a Metasploit listener
15. Update
16. Exit

Choice: █
```

Maltego

- Maltego (*https://www.maltego.com/*) is software for data collection and visualization
- It can perform BOTH passive and active scans, so you must be careful with it
- It can be used as a context or investigation map
- It uses GUI and is easy to use
- It is OS independent



Entity Palette

DNS Name
Domain Name System server name

Domain
An internet domain

IPv4 Address
An IP version 4 address

MX Record
A DNS mail exchange record

NS Record
A DNS name server record

Netblock
A range of IP version 4 addresses

URL
An internet Uniform Resource Locator (URL)

Tracking Code
Represents a tracking code for a web service.

Website
An internet website

Run View

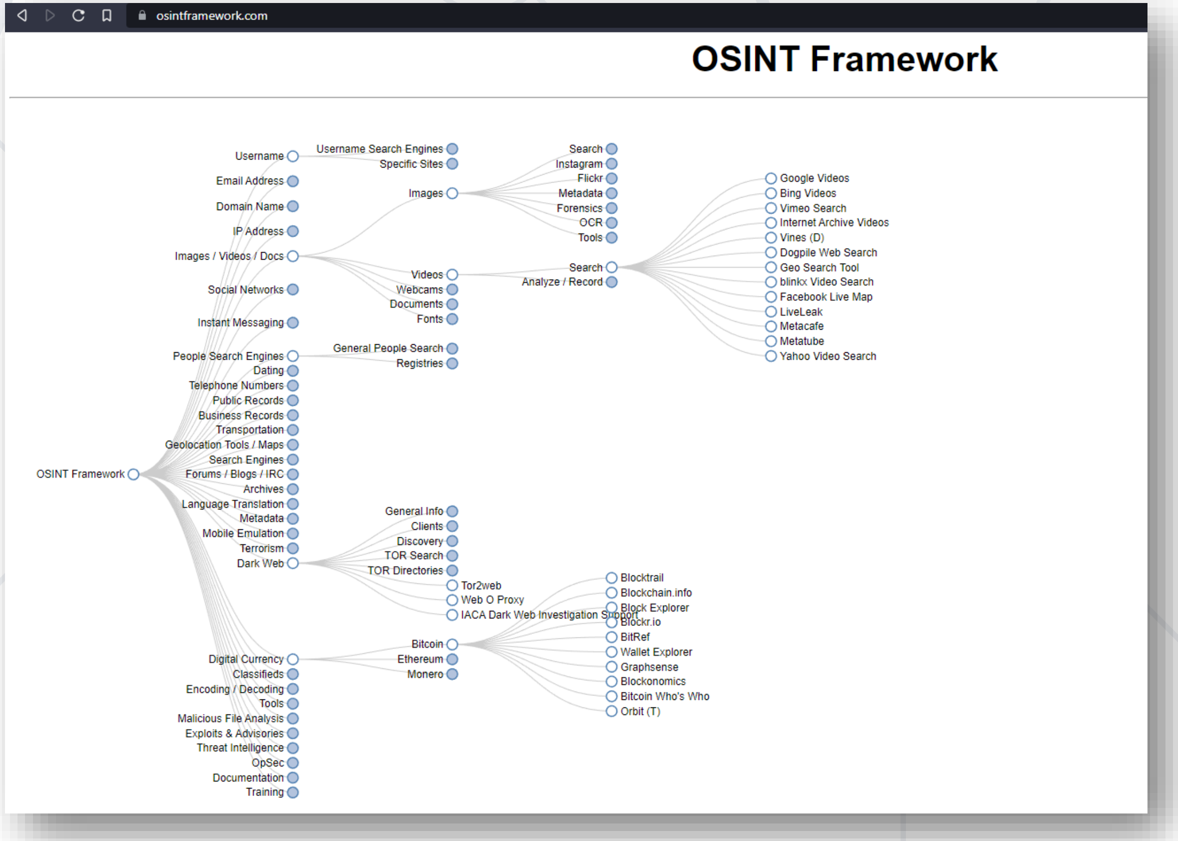
Transforms

Machines

Prune Leaf Entities
Machine to prune leaf entities.

OSINT Framework

- OSINT Framework (https://osintframework.com/) can be used for completely anything
- From third party IP scanners, to news parsers
- Better dedicate time to play with it



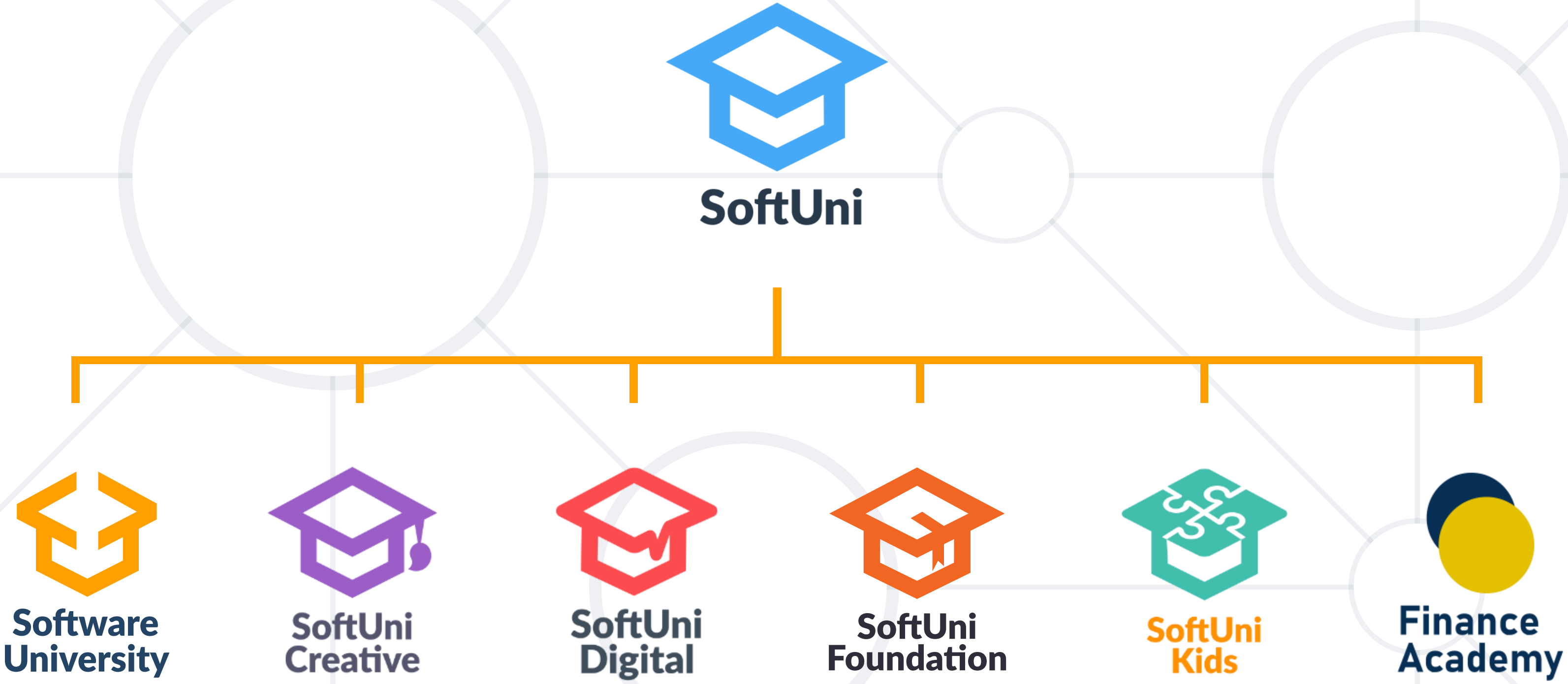
Search Engines

- Their intentional purpose is to help people find what they need, for example a website or image
- What if someone needs information about someone else?
- Search engines can query amazingly high numbers of results
- They can filter files, specific web titles, specific body strings and pretty much anything else
- There is a term for such activities, known as "google hacking"
- Google hacking is a database of google (most usually) queries, allowing you to grep detailed information about the target (*https://www.exploit-db.com/google-hacking-database*)

Summary

- What is **DNS**?
  - Scanning **DNS**
  - **DNS** Record
- Passive Reconnaissance in a **Nutshell**
  - Discover
  - **Maltego**
  - **OSINT Framework**
  - Search Engines

Questions?



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