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### 430/530 - Traceroute Lab

Answer the following questions using complete sentences. You may use outside sources to help you formulate responses; however, all answers should be in your own words, and sources should be cited

# **DNS Query Activity**

	Original Website URL	Original Website IP Address	Discovered IP Address	Machine Name of Discovered IP
Example	www.google.com	172.217.6.4	172.217.6.36	sfo03s08-in-f4.1e100.net.
1	ipv4flagday.net	172.67.169.116	None Found	N/A
2	github.com	140.82.112.3	140.82.112.6	lb-140-82-112-6-iad.github.com.
3	www.mozilla.org	108.157.137.198	108.157.137.81	server-108-157-137-81.mci50.r.cloudfront.net.
4	wttr.in	5.9.243.187	5.9.243.225	static.225.243.9.5.clients.your-server.de.
5	www.freshports.org	54.227.255.74	54.227.255.99	ec2-54-227-255-99.compute-1.amazonaws.com.

#### Screen Capture - DNS query

### Screen Capture - Reverse DNS query

```
drill github.com
  ->>HEADER<<- opcode: QUERY, rcode: NOERROR, id: 42237
  flags: qr rd ra ; QUERY: 1, ANSWER: 1, AUTHORITY: 0,
                                                                    6.112.82.140.in-addr.arpa.
;; QUESTION SECTION:
                                                                  ;; ANSWER SECTION:
;; github.com. IN
                                                                  6.112.82.140.in-addr.arpa.
                                                                   AUTHORITY SECTION:
;; ANSWER SECTION:
                                                                    ADDITIONAL SECTION:
github.com.
                           IN
                                             140.82.114.3
                                                                    Query time: 54 msec
;; AUTHORITY SECTION:
                                                                    SERVER: 8.8.8.8
                                                                    WHEN: Thu Sep 29 10:44:35 2022
                                                                    MSG SIZE rcvd: 87
;; ADDITIONAL SECTION:
;; Query time: 61 msec
;; SERVER: 8.8.8.8
;; WHEN: Thu Sep 29 10:44:06 2022
  MSG SIZE rcvd: 44
```

```
> drill -x 140.82.112.6
;; ->>HEADER

;; flags: qr rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 0
;; QUESTION SECTION:
;; 6.112.82.140.in-addr.arpa. IN PTR

;; ANSWER SECTION:
6.112.82.140.in-addr.arpa. 2315 IN PTR lb-140-82-112-6-iad.github.com.

;; AUTHORITY SECTION:
;; ADDITIONAL SECTION:
;; Query time: 54 msec
;; SERVER: 8.8.8.8
;; WHEN: Thu Sep 29 10:44:35 2022
;; MSG SIZE rcvd: 87

> jboicker[]
```

Q1: Attacker using nslookup/dig

An attacker can use dns lookups to preform reconnaissance. They can use dig to find machines, if the DNS server gives a PTR response that means that IP address is being used by a machine.

# **Packet Routing**

Screen Capture - traceroute/tracert

Q2: \* \* \* traceroute results

The \*\*\* is shown when the router does not respond in a certain amount of time.

A router could simply be programmed to not respond to TTL or a firewall may block the ICMP response.

Another possibility is network congestion prevents the packet from reaching the sender in the time period.

## **Network Diagram**

Answer the following questions from the lab using complete sentences.

Q3: traceroute/tracert output

I don't think traceroute would display the route. Their is no gaurentee by IP to send packets in the same route. Depending upon network congestion and changes to network between the two end devices, the packets could very easily be sent on a different path that what was shown.

Q4: Geographical location

https://stackoverflow.com/questions/1996106/how-does-ip-geolocating-work. https://whatismyipaddress.com/geolocation.

This stackoverflow and my ip pages show that geolocation services has a large database of information that is used to correlate an ip and webpage to a location. They use the registry and ISPs to get information on where the IP is. As well, they can use infromation on who is hosting the webpage to learn where it is like iastate is ames or something in AWS is only where there are databases physically. Which is known information. This only gets so close to where something is like to the city and only if they are stored in their database.

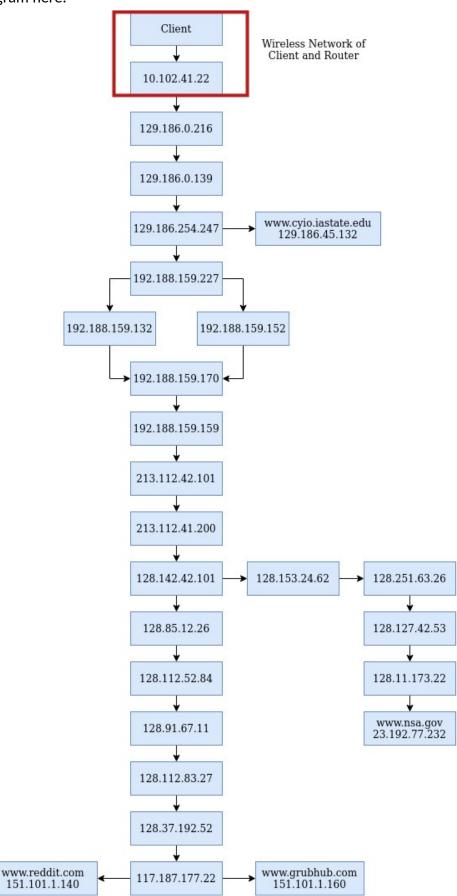
Q5: Routers in the network 1

Q6: Dynamic routing

Yes, there is dynamic routing in the diagram. The jump after 192.188.159.227 has multiple choices to either 192.188.159.132 or 192.188.159.152 that we see in the traceroutes. The hops after both of those go to the same point so we know of multiple possible paths that can be taken dynamically.

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Upload your network diagram here.



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