Lab 8

Two Goals

- **Implement** a simple traceroute
  - Get familiar with creating packets

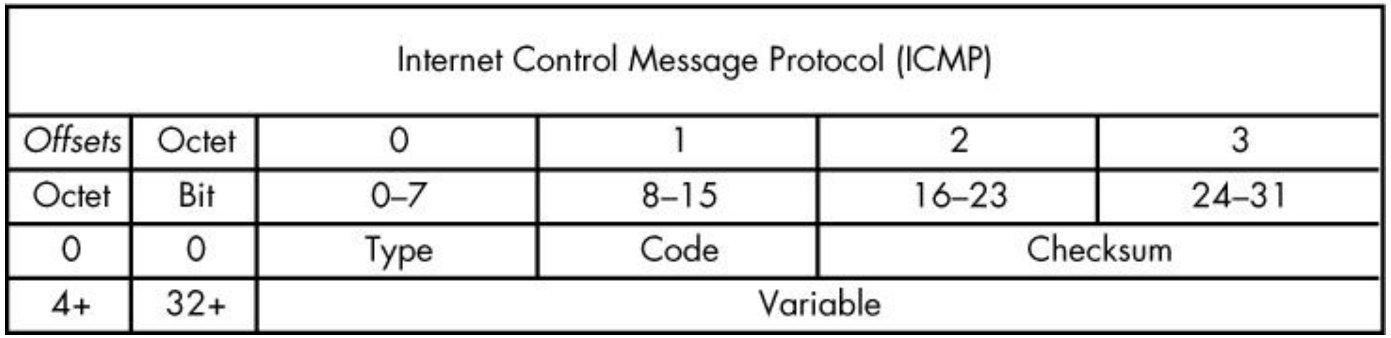
- **Analyze** traffic *after* an incident

traceroute

```
./traceroute <IP_ADDRESS>
```

Need to set both IP and ICMP headers

- Main IP fields
  - Dst IP address
  - TTL
- Main ICMP types:
  - Request
  - Reply
  - Time Exceeded

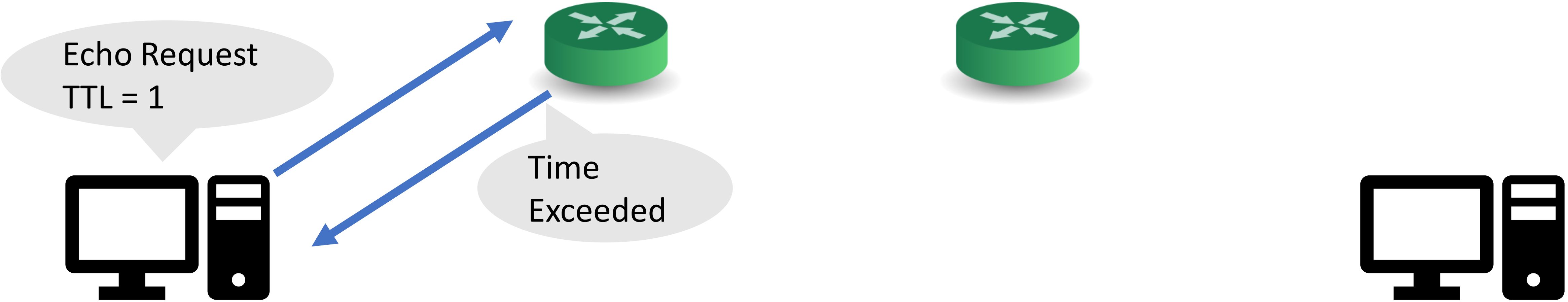


Internet Control Message Protocol (ICMP)

Offsets	Octet	0	1	2	3
Octet	Bit	0–7	8–15	16–23	24–31
0	0	Type	Code	Checksum	
4+	32+	Variable			

traceroute

Build a path of routers from source to destination. How?



traceroute

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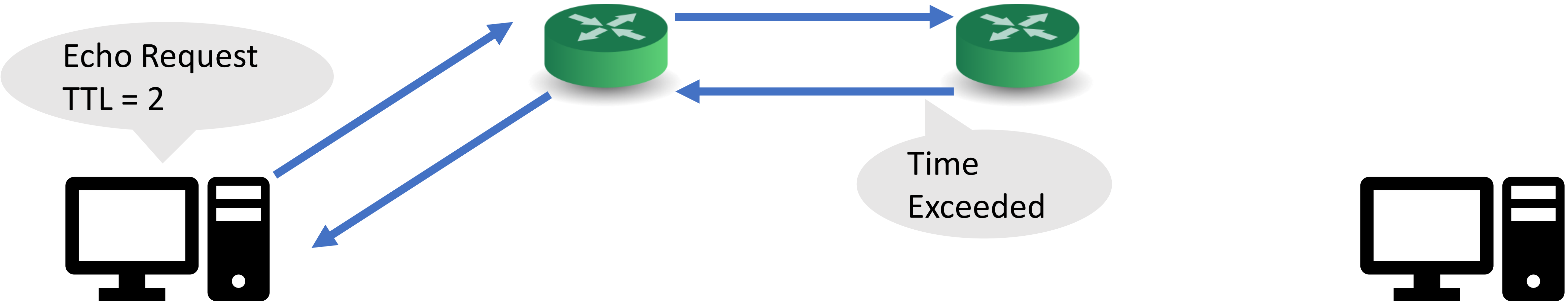

traceroute

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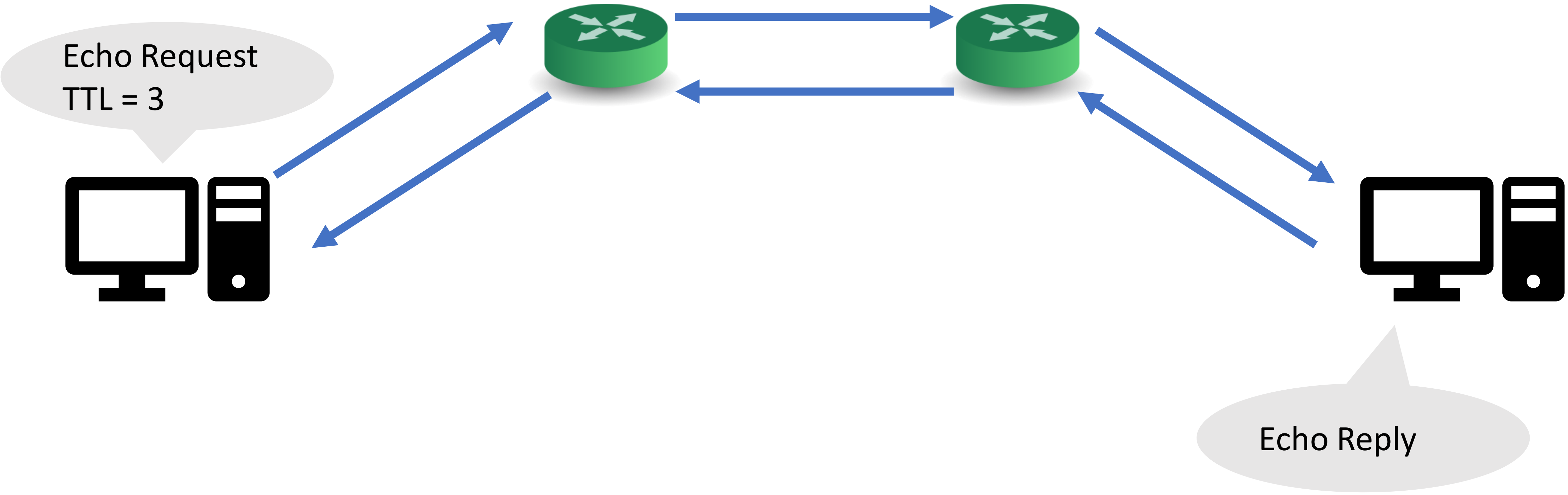


scapy APIs

- Rich library (useful for spoofing, analysis, tooling, etc.)
- The scapy.all module:
- Functions:
  - `sr`: send and receive multiple pkts
  - `sr1`: send pkts and receive the first one!
- Classes:
  - `IP` and `ICMP`: corresponding protocol headers

- Basic library usage: https://scapy.readthedocs.io/en/latest/usage.html

scapy APIs: Example

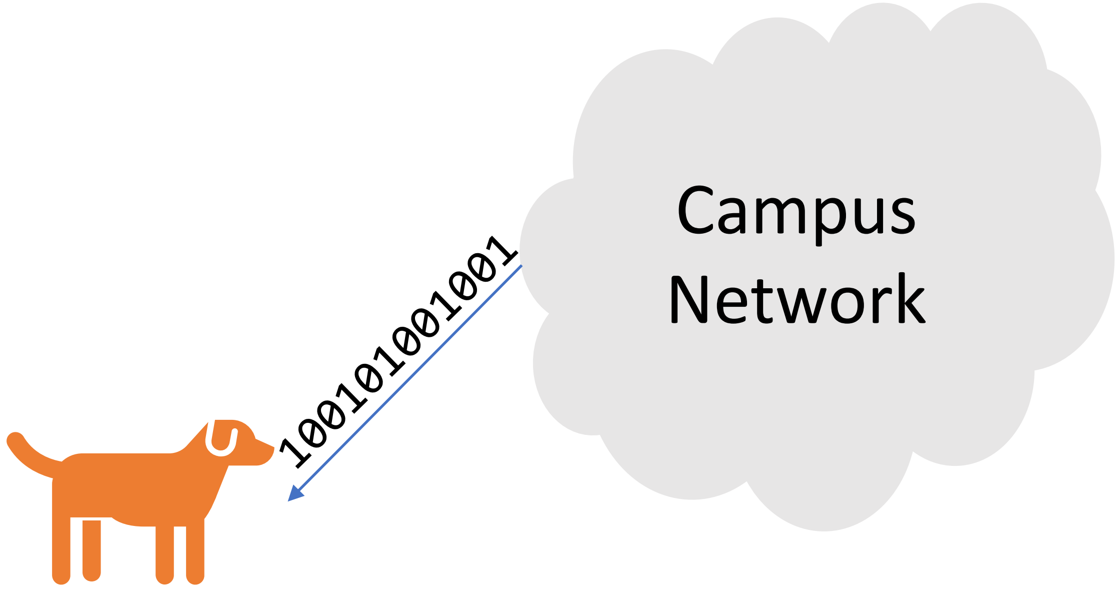
```
from scapy.all import IP, TCP, sr1
# Alternative: from scapy.all import *
# May collide with your classes/functions

pkt = IP(dst=‘1.1.1.1’)/TCP(dport=80)/’PAYLOAD’
rep = sr1(pkt)
rep.summary()
```

1. **Construct** a TCP packet:
    - IP and TCP headers
    - Payload
2. **Send** the packet using `sr1()`
3. **Print** a summary of the reply packet (if any)

Traffic Analysis

- A given harassment scenario
- You need to:
  - analyze the traffic
  - find the harasser
  - provide enough evidence



Sniffer

Questions?