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Name of the Python source codes and Pcap files submitted:

- part1b_secrets.py
- part1b_pcaps_comparison.py
- part1b_pcaps_ChatGPT.py

In this case, the Internet Control Message Protocol (ICMP) is fundamentally handling the error messaging to and for the sender.

When printing out the type and code of error in both pcap files, we noticed that the error type is 11 with code 0. Error type 11 indicates that the allowed time has been exceeded, while code 0 indicates that the Time-to-live (TTL) in the IP header has reached 0 without arriving at its final destination. Basically, this type and code combination tells the sender that the packets “expired” while traveling the network. Note that the TTL for all the packets is equal to 1, which doesn’t allow the packets to travel all the way to their destination.

Furthermore, at the end of both pcap files, we noticed an error of type 3 and code 3 respectively. Error type 3 indicates that the destination is unreachable, and the code number specifies the reason why it was unreachable. In this case, code 3 means that the port, specifically, was unavailable or unreachable.

By looking at the data, one could infer that this is an attempt of a distributed denial-of-services (DDoS) given the fact that there are multiple source IP addresses trying to send data to a single destination IP address.

One of the very subtle differences between the two pcap files is that one uses a globally unique address as source, while the other uses a locally administered address, therefore, if this is a DDoS attack, one pcap file shows an attack within a local network while the other shows an attack in the public internet.

For the statistics to report, the Python script “part1b_pcaps_comparison.py” lists the unique source and destination IP addresses in each pcap file. Furthermore, it then iterates over every single packet and prints in ascending order:

- Packet number
- Source IP address
- Destination IP address
- Type of error message
- Code of error message

Chat session with ChatGPT:
https://chat.openai.com/share/51e32b26-763b-4aa3-950e-0d8cbacd3ede

The implementation after interacting with chatGPT is “part1b_pcaps_ChatGPT.py”. Note that we tweaked the implementation by adding code that converts the addresses to their readable version.