

## Step 1 (TCP)

**a) Explain both the command you used in detail? What did you actually do?**

NC - Netcat is a command-line utility that reads and writes data across network connections. We used `nc -k -l` command flag to continue listening after disconnection and used `nc (host) (port)` to execute a port scan. We then passed two lines of string.

**b) How many frames were needed to capture those 2 lines?**

4

**c) How many packets were needed to capture those 2 lines?**

4

**d) How many packets were needed to capture the whole "process" (starting the communication, ending the communication)?**

12

**e) How many total bytes went over the wire? How much overhead was there (percent of bytes not in the above 2 lines)?**

**Total Bytes over wire:**

710

**f) How much overhead was there (basically the percentage of traffic that was not needed to send SER321 Rocks!)?**

**Total Bytes:** 710

**Bytes to send SER321 Rocks:** 238

**Bytes not involved:**  $710 - 238 = 472$

**Overhead:** 66.5%