NAT Slipstreaming

Amir Mohamadi

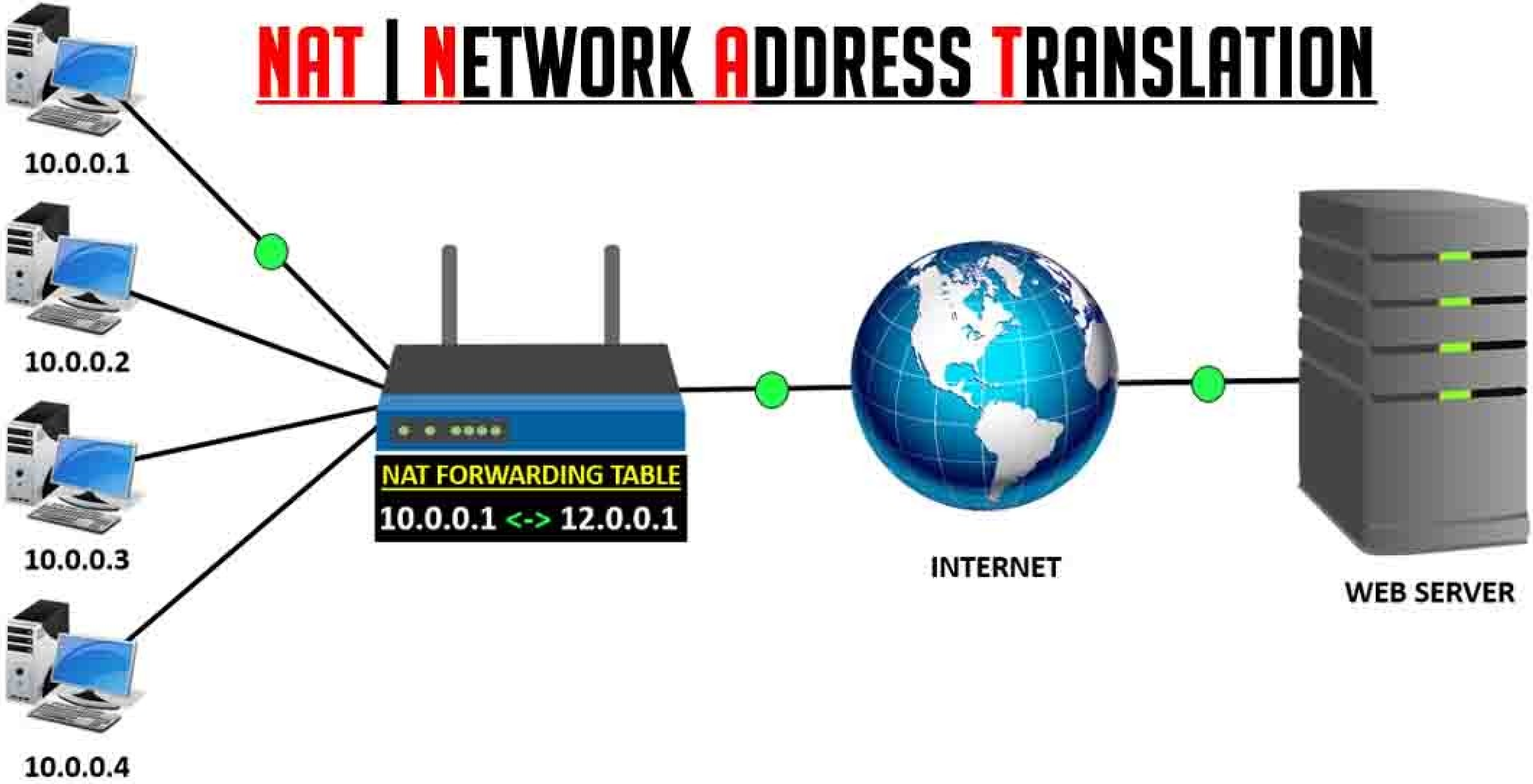
NAT SlipStreaming Explained

SAMY

NAT Slipstreaming Summary

- Goal: Attacker wants to access a service on a victim machine behind NAT (8080)
- Victim visits the attacker web server & downloads page
- Page makes a special malicious POST request to attacker
- Victim Router inspect packet and sees a SIP Message instructing to open port to victim
- Attacker access victim service on the opened port

NAT | NETWORK ADDRESS TRANSLATION



10.0.0.1

10.0.0.2

10.0.0.3

10.0.0.4

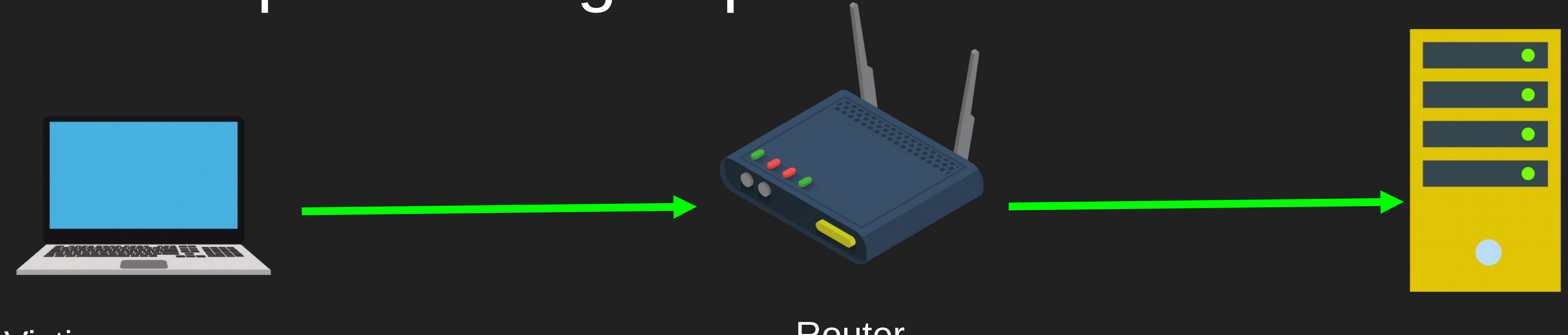
NAT FORWARDING TABLE

10.0.0.1 <-> 12.0.0.1

INTERNET

WEB SERVER

NAT Slipstreaming Explained



Victim
IP: 10.0.0.2
Running service on 8080

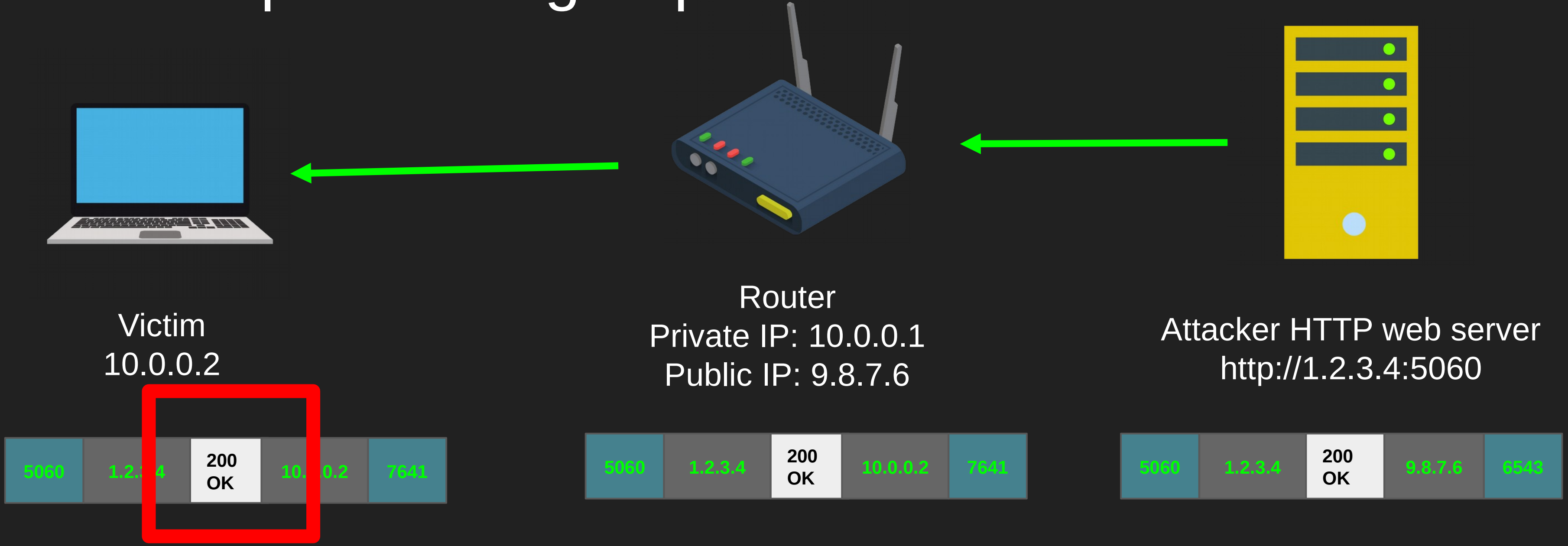
Router
Private IP: 10.0.0.1
Public IP: 9.8.7.6

Attacker HTTP web server
http://1.2.3.4:5060

7641	10.0.0.2	GET/	1.2.3.4	5060
6543	9.8.7.6	GET/	1.2.3.4	5060
6543	9.8.7.6	GET/	1.2.3.4	5060

Internal IP	Internal Port	Ext IP	Ext Port	Dest IP	Dest Port
10.0.0.2	7641	9.8.7.6	6543	1.2.3.4	5060

NAT Slipstreaming Explained



Victim
10.0.0.2

5060	1.2. 4	200 OK	10. 0.2	7641

Router
Private IP: 10.0.0.1
Public IP: 9.8.7.6

5060	1.2.3.4	200 OK	10.0.0.2	7641

Attacker HTTP web server
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5060	1.2.3.4	200 OK	9.8.7.6	6543

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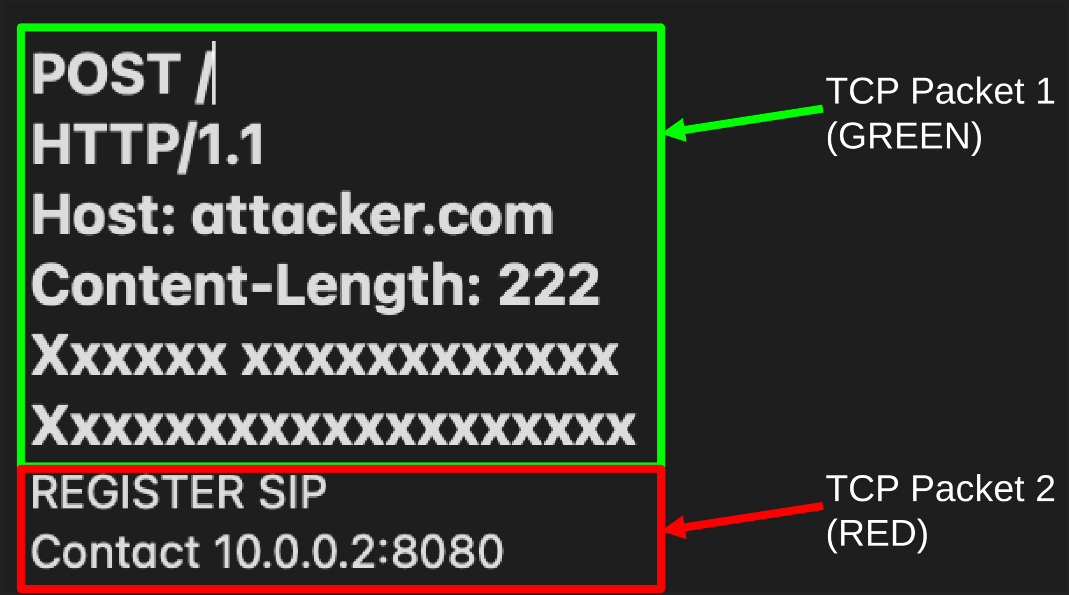
NAT Slipstreaming Explained

- Victim gets back malicious HTML Page
- Submits a special POST request to http://1.2.3.4:5060 with a malicious body

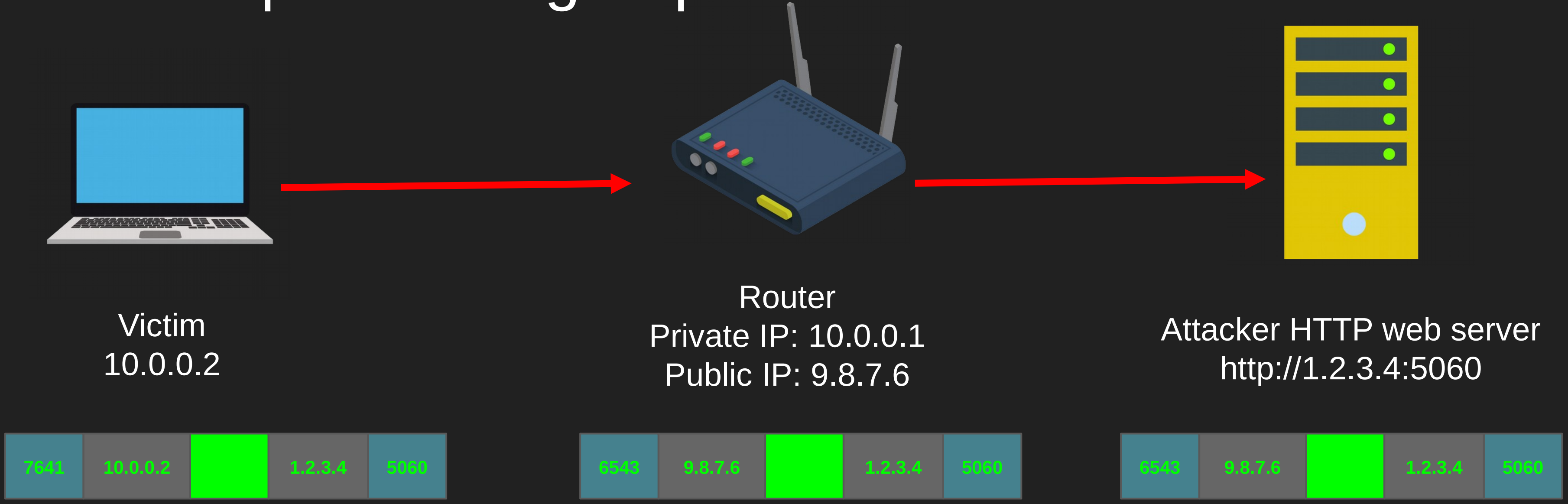


```
POST /
HTTP/1.1
Host: attacker.com
Content-Length: 222
Xxxxxx xxxxxxxxxxxx
Xxxxxxxxxxxxxxxxxxx
REGISTER SIP
Contact 10.0.0.2:8080
```

TCP Packet 1
(GREEN)

TCP Packet 2
(RED)

NAT Slipstreaming Explained



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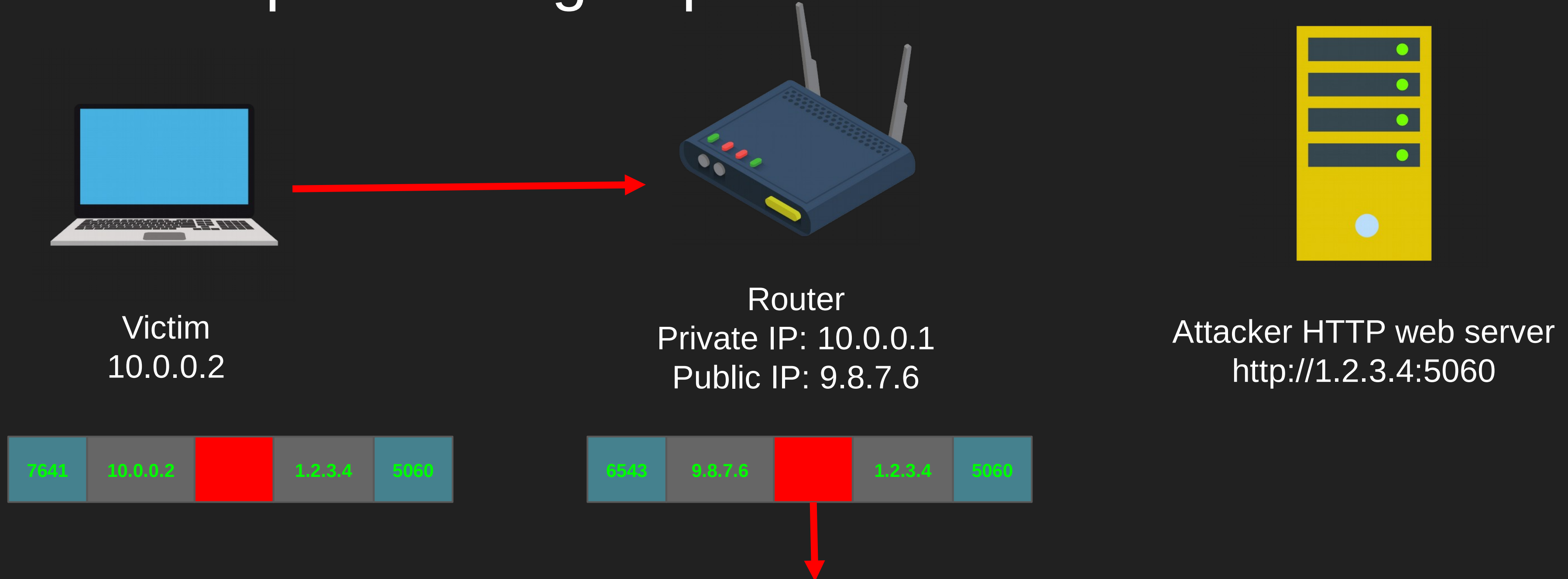

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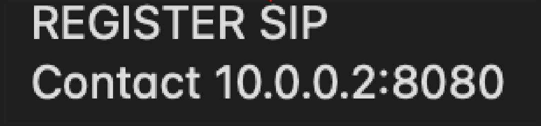
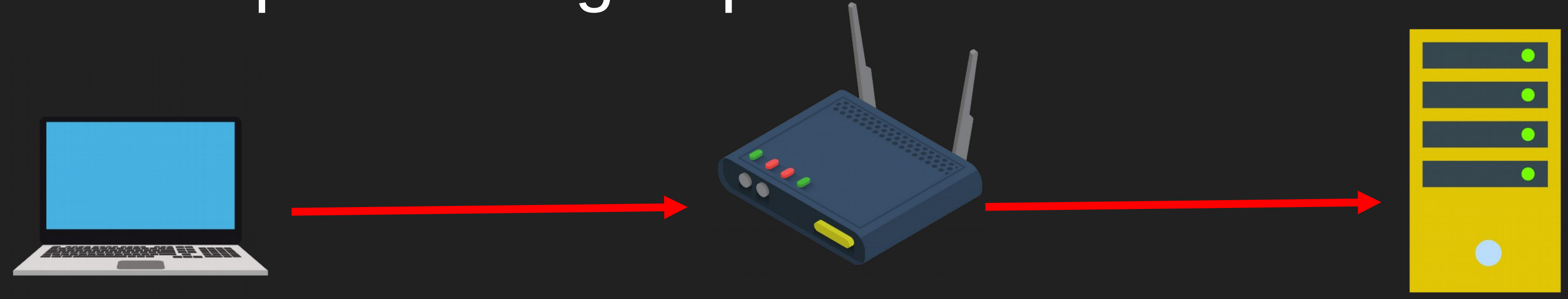


REGISTER SIP
Contact 10.0.0.2:8080

Router sees a packet targeted to 5060 and has REGISTER SIP, it thinks its a SIP message from the client and OPENS PORT 8080 and adds a NAT entry to allow external access (only if ALG SIP is enabled)

NAT Slipstreaming Explained



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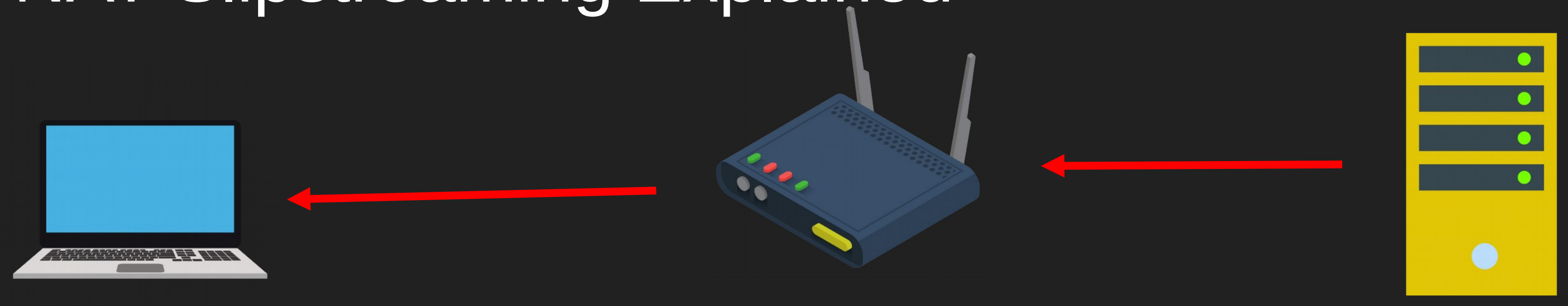

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10.0.0.2	8080	9.8.7.6	8080	1.2.3.4	5060

- NAT Slip streaming by Samy Kamkar [https://samy.pl/slipstream/]
- POC [https://github.com/samyk/slipstream]
- RFC2766 – Network Address Translation
- RFC3261 – SIP [session initiation protocol]
- RFC7742 – Web RTC