ARP Cache Poisoning

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Contents

1 Why do I think it was successful

ARP Cache Poisoning is a technique by which an attacker sends (spoofed) Address Resolution Protocol (ARP) messages onto a local area network. Generally, the aim is to associate the attacker's MAC address with the IP address of another host, such as the default gateway, causing any traffic meant for that IP address to be sent to the attacker instead.

ARP Cache Poisoning can create many unusual behavior in network. Some of them are

- ☐ Denial of service
- ☐ Man in the middle
- ☐ Stop all traffic
- ☐ Session hijacking

The reason why our attack is successful are

- ☐ Our attack is successful because after performing our ARP Cache Poisoning Attack it has changed the victim's ARP table.In the victim's ARP table for both attacker and gateway there is a single MAC address.That means any packet from victim to gateway will not be delivered to only gateway but also to the attacker.
- ☐ Our attack has stopped the packet transfer between gateway and victim.That means victim is unable to access internet.Thus Denial of Service is performed through ARP cache poisoning.

2 Steps of Attack

There are mainly two steps .At first step our attack will poison victim's ARP Cache. In the second step our attack will restrict victim from using internet. Let's see each step individually.

2.1 MAC table changing part

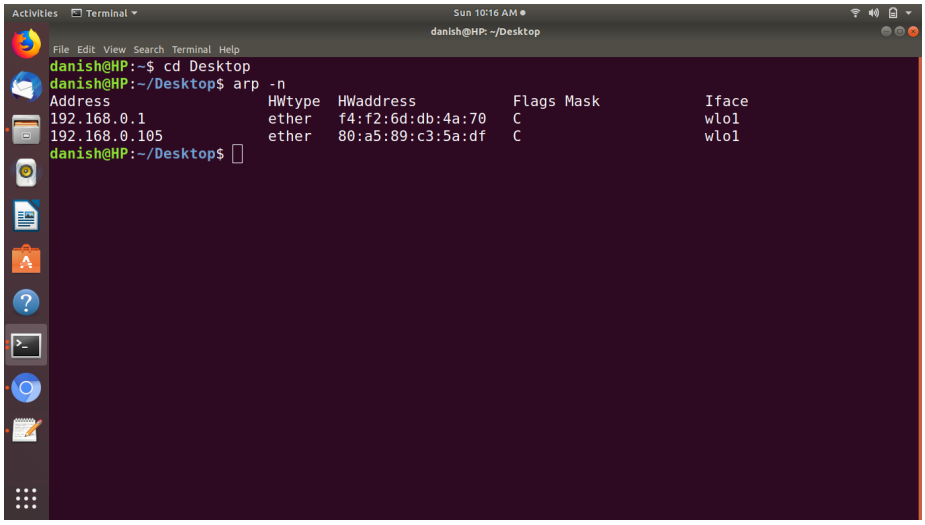
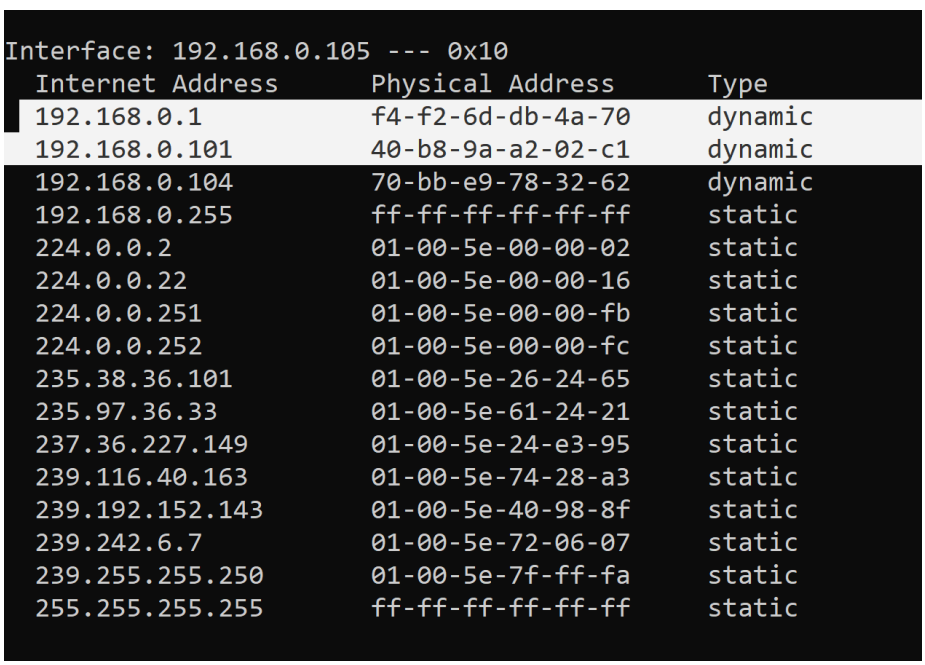


Figure 1: `attacker_pc_before_cache_table_attack`



```
Interface: 192.168.0.105 --- 0x10
  Internet Address      Physical Address      Type
  192.168.0.1           f4-f2-6d-db-4a-70     dynamic
  192.168.0.101         40-b8-9a-a2-02-c1     dynamic
  192.168.0.104         70-bb-e9-78-32-62     dynamic
  192.168.0.255         ff-ff-ff-ff-ff-ff     static
  224.0.0.2             01-00-5e-00-00-02     static
  224.0.0.22            01-00-5e-00-00-16     static
  224.0.0.251           01-00-5e-00-00-fb     static
  224.0.0.252           01-00-5e-00-00-fc     static
  235.38.36.101         01-00-5e-26-24-65     static
  235.97.36.33          01-00-5e-61-24-21     static
  237.36.227.149        01-00-5e-24-e3-95     static
  239.116.40.163        01-00-5e-74-28-a3     static
  239.192.152.143       01-00-5e-40-98-8f     static
  239.242.6.7           01-00-5e-72-06-07     static
  239.255.255.250       01-00-5e-7f-ff-fa     static
  255.255.255.255       ff-ff-ff-ff-ff-ff     static
```

Figure 2: `victim_pc_before_cache_table_attack`

How to run

General Command ::sudo python ./cachetablepoisoner.py -g gateway-ip -t target-ip

Example Command ::sudo python ./cachetablepoisoner.py -g 192.168.0.1 -t 192.168.1.105

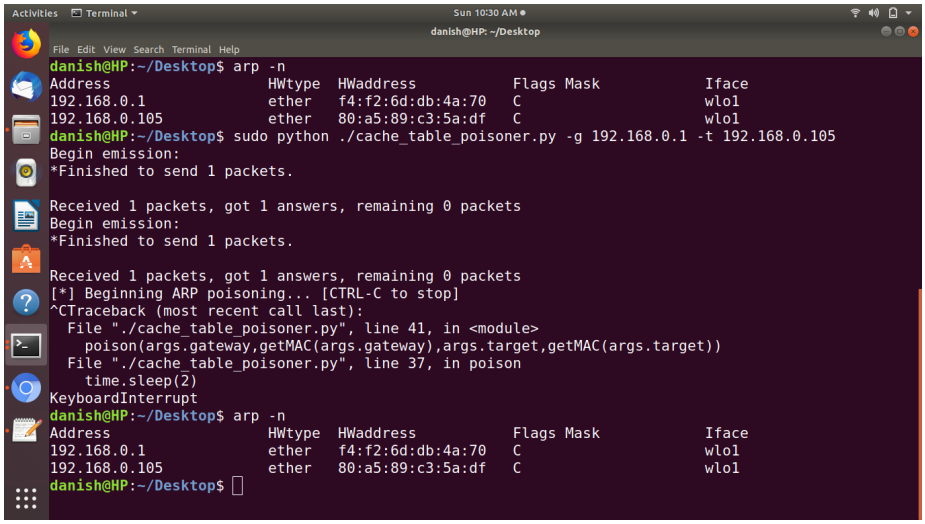


Figure 3: `attacker_pc_after_cache_table_attack`

```
Interface: 192.168.0.105 --- 0x10
  Internet Address      Physical Address      Type
  192.168.0.1           40-b8-9a-a2-02-c1     dynamic
  192.168.0.101         40-b8-9a-a2-02-c1     dynamic
  192.168.0.104         70-bb-e9-78-32-62     dynamic
  192.168.0.255         ff-ff-ff-ff-ff-ff     static
  224.0.0.2             01-00-5e-00-00-02     static
  224.0.0.22            01-00-5e-00-00-16     static
  224.0.0.251           01-00-5e-00-00-fb     static
  224.0.0.252           01-00-5e-00-00-fc     static
  235.38.36.101         01-00-5e-26-24-65     static
  235.97.36.33          01-00-5e-61-24-21     static
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  239.192.152.143       01-00-5e-40-98-8f     static
  239.242.6.7           01-00-5e-72-06-07     static
  239.255.255.250       01-00-5e-7f-ff-fa     static
  255.255.255.255       ff-ff-ff-ff-ff-ff     static
```

Figure 4: victim_pc_after_cache_table_attack

2.2 Denial of service part

How to run

General Command : `sudo python2 denial_of_service_arpspoof.py` $-i$ `interface` $-t$ `target_1_IP,target_2_IP,target_3_IP` $-g$ `Default_(RouterIP)` Example Command : `sudo python2 denial_of_service_arpspoof.py` $-i$ `wlo1` $-t$ `192.168.0.105` $-g$ `192.168.0.1`

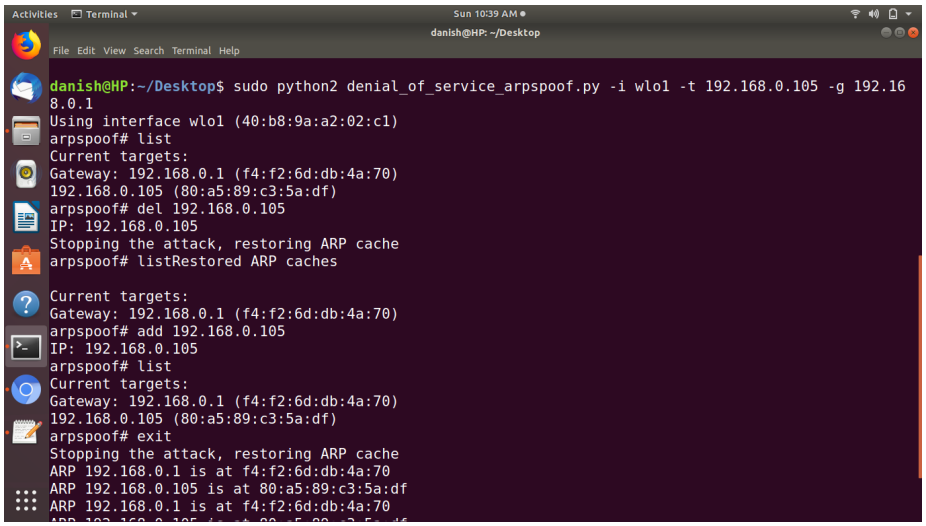

Figure 5: attacker_pc_after_denial_1_attack

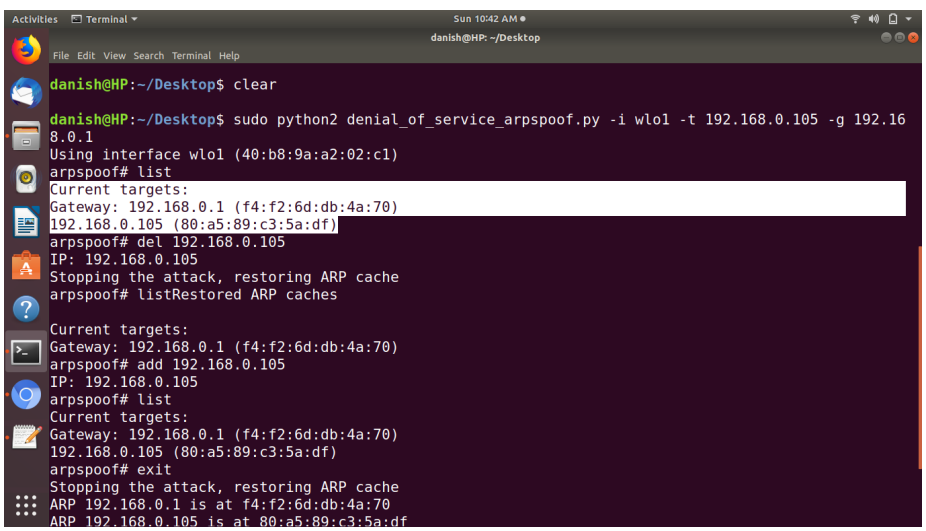

Figure 6: attacker_pc_after_denial_2_attack

3 Counter measure of ARP Cache Poisoning

Counter measures are divided into two types.First is preventing measures and second is detecting measures. The simplest form of certification is the use of static, read-only entries for critical services in the ARP cache of a host. IP address-to-MAC address mappings in the local ARP cache may be statically

entered. Hosts don't need to transmit ARP requests where such entries exist. While static entries provide some security against spoofing, they result in maintenance efforts as address mappings for all systems in the network must be generated and distributed. This does not scale on a large network since the mapping has to be set for each pair of machines resulting in n2-n ARP entries that have to be configured when n machines are present; On each machine there must be an ARP entry for every other machine on the network; n-1 ARP entries on each of the n machines.