PACKET CAPTURE ANALYSIS

Introduction

The dynamic evolution of technology has led to a complex interconnected world that forms networks in every aspect of our lives. We continue to depend on different technologies to automate or make our daily tasks easier. As the world of technology continues to bring different regions closer due to its flexibility it is vital to be aware of the rise in cybercriminals since this enlarges the attack surface in all possible angles. This paper focuses on a lab detailing the steps taken in network packet capture analysis using capturing tools to investigate data across a network. This interconnection creates a network where a packet is derived and can be defined as the smallest unit of data that is grouped and transferred over a network (An & Lu, 2016).

This lab will be investigating a case of a suspect by the name “Ann” who is believed to have disappeared after being bailed out. We will be looking into a packet capture that is alleged to have her whereabouts.

Analysis

The suspect is believed to have visited online addresses which are shown and detailed below.

The suspect at hand laptop address is Ann’s MAC address: 00:21:70: 4D:4F:AE which uniquely identifies the device in the captured network.

Cisco Inc

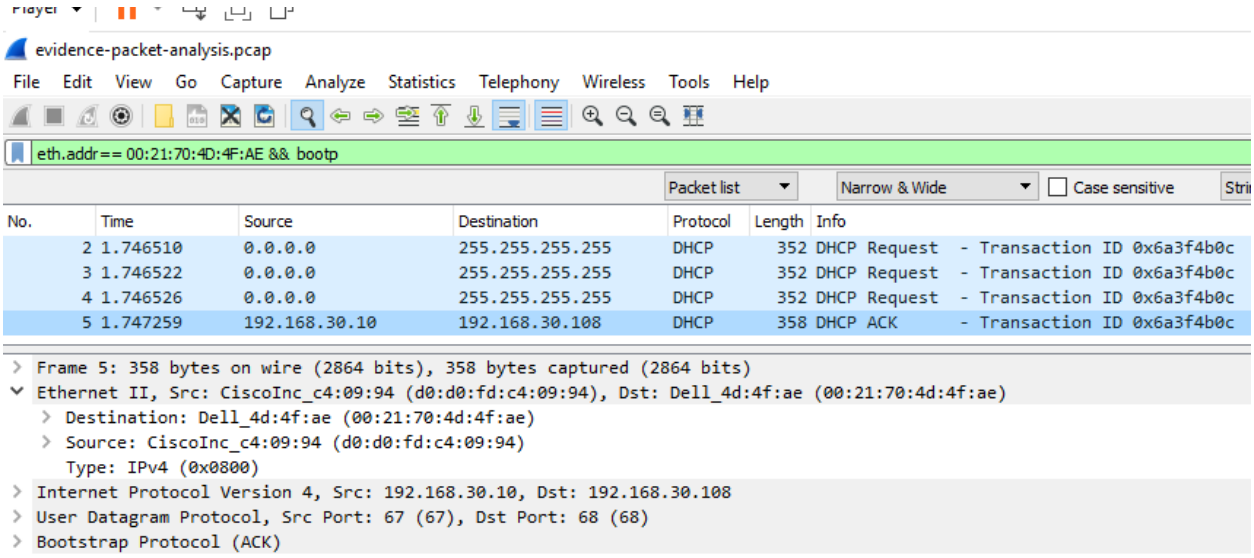


Figure 1/Cisco

The above screenshot shows that the laptop connects to a cisco device to access the network in the Internal network: 192.168.30.0/24. The list below shows the extended online addresses that the user visited.

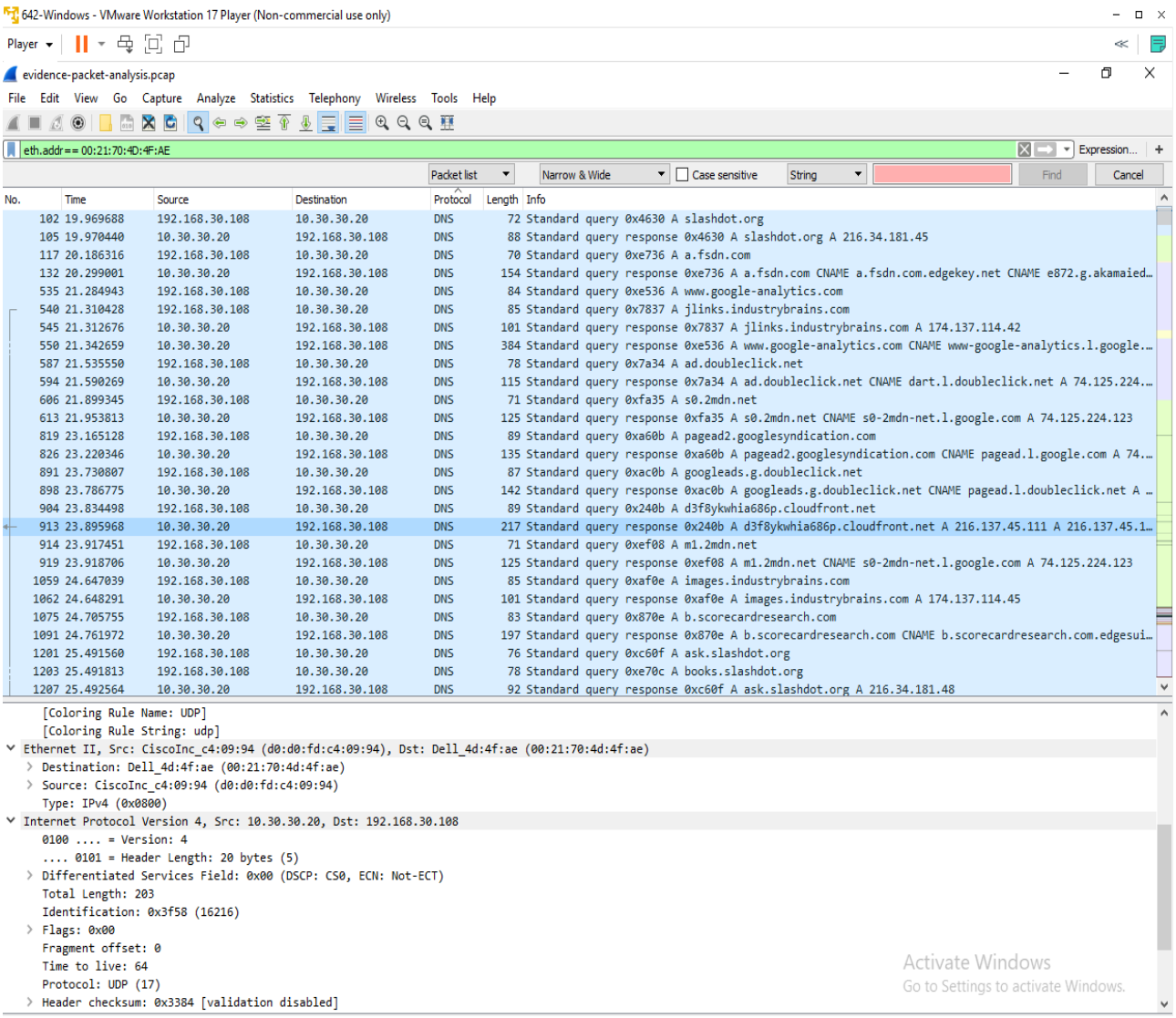


Figure 2/Addresses

The figure above shows some of the addresses visited such as slashdot.org , a.fsdn.com, jlinks.industrybrains.com et cetera. The above figure is grouped by the protocol DNS (Domain Name System) protocol that translates the ip addresses into domain names.

The credentials captured in the screenshots below are encoded with base64 and after decoding the results were:

```
c251YWt5ZzMza3k= -sneakyg33ky
czAwcGVyczNrcjF0 - s00pers3kr1t
```

Figure 3/decoded

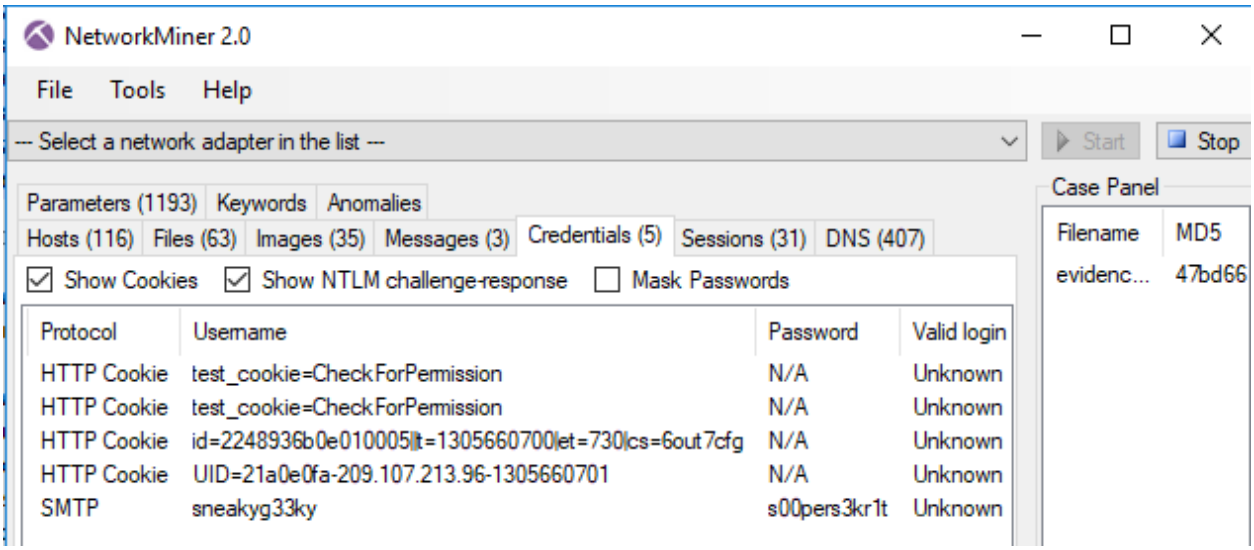


Figure 4/credentials

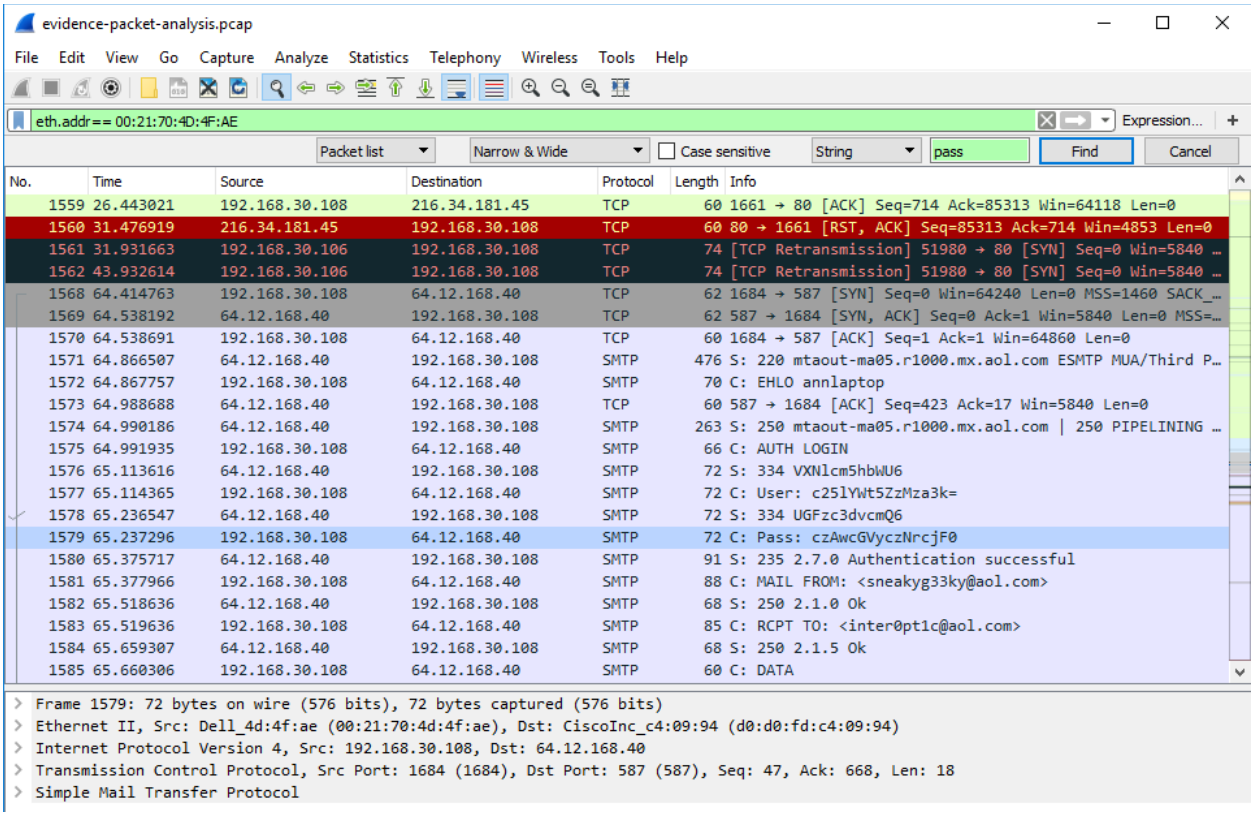
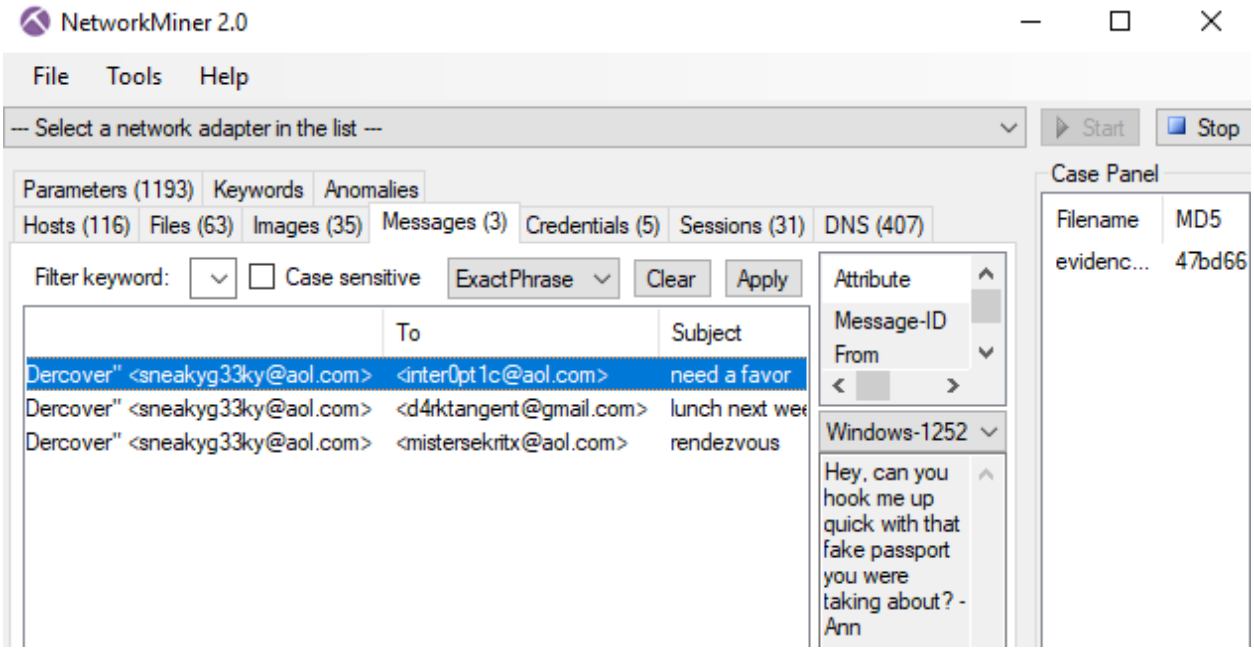


Figure 5/credentials

The above screenshot shows the web mail organization showing the credentials used for the login authorization.

The figures below show that Ann communicated with three other recipients with one alleged to be her lover. The emails are listed below.



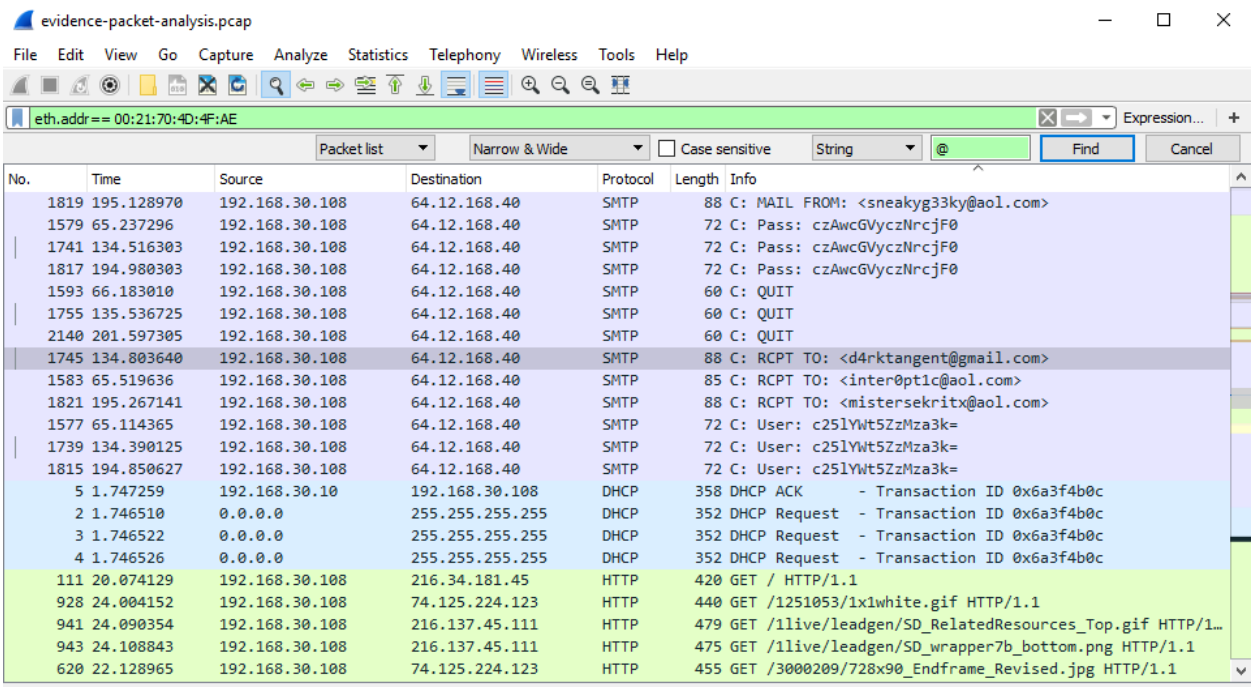


Figure 6/Emails

The contents of the email conversations above were captured below, detailing what Ann was up to and what she was trying to do. The mail aol is a free mail that offers features like spam blocking, news, security ,weather et cetera which was used by Ann to do her communication (Aol, n.d.).

```
> From: "Ann Dercover" <sneakyg33ky@aol.com>, 1 item
> To: <d4rktangent@gmail.com>, 1 item
  Subject: lunch next week
  Date: Tue, 17 May 2011 13:33:26 -0600

<DIV><FONT face=3DArial size=3D2>Sorry-- I can't do lunch next week =\r\n
after all.=20\r\n
Heading out of town. Another time!</FONT></DIV>\r\n

  Message-ID: <00ab01cc14c9$227de600$6b1ea8c0@annlaptop>
  From: "Ann Dercover" <sneakyg33ky@aol.com>, 1 item
  To: <inter0pt1c@aol.com>, 1 item
  Subject: need a favor
  Date: Tue, 17 May 2011 13:32:17 -0600
```

```
<DIV><FONT face=3DArial size=3D2>Hey, can you hook me up quick with that =\r\n
fake=20\r\n
passport you were taking about? - Ann</FONT></DIV>\r\n

Message-ID: <00bc01cc14c9$6fd1bc60$6b1ea8c0@annlaptop>
From: "Ann Dercover" <sneakyg33ky@aol.com>, 1 item
To: <mistersekritx@aol.com>, 1 item
Subject: rendezvous
Date: Tue, 17 May 2011 13:34:26 -0600

Line-based text data: text/plain
    Hi sweetheart! Bring your fake passport and a bathing suit. Address =\r\n
    attached. love, Ann
```

Figure 7/Transcripts

Ann had a conversation with a recipient allegedly her lover and they did share files where she was given the address to where they were to meet up which indicates a clue of her physical whereabouts. The figure below shows the google maps details of the physical address.

Meet me at the fountain near the rendezvous point. Address below. I'm bringing all the cash.

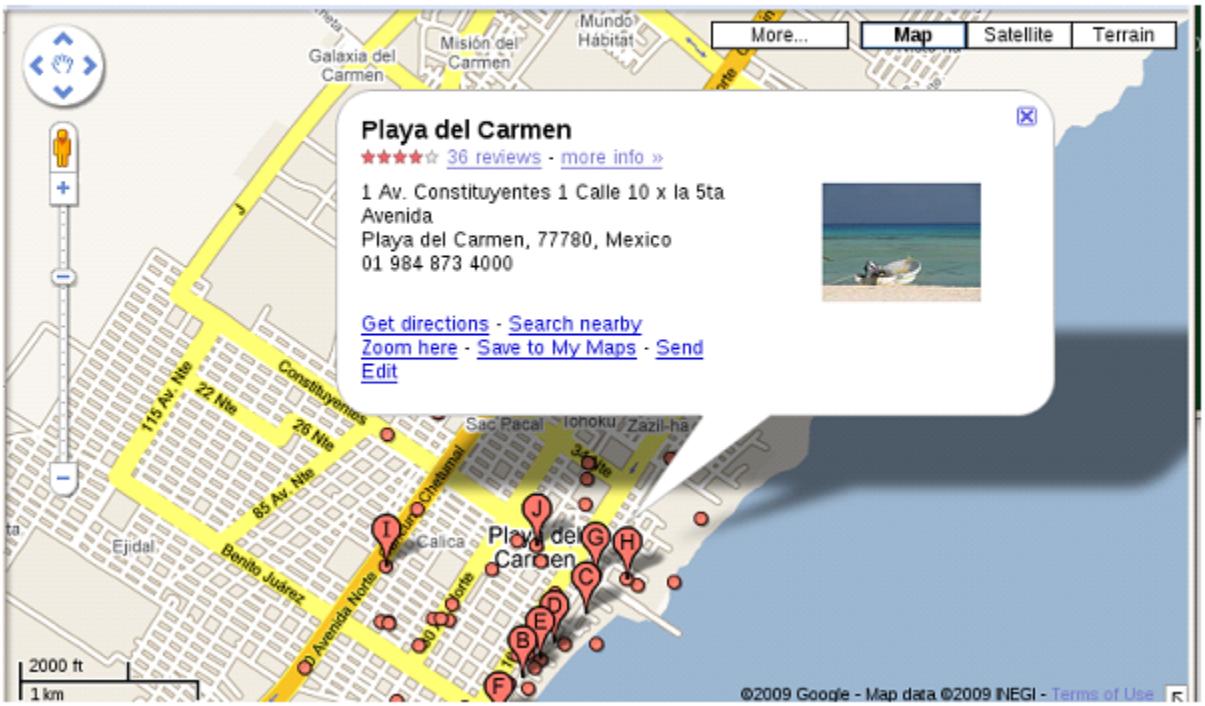


Figure 8/Location

Glossary

Domain Name system (DNS) – This is a system that is used to translate human friendly hostname into ip addresses (P.Hoffman & K.Fujiwara, 2024).

Mac addresses – this a unique identifier assigned to a network interface controller for use as a network address in communication (Celestin & Mathieu, 2016).

References

An, X., & Lu, X. (2016). Packet Capture and Protocol Analysis Based on Winpcap. *2016 International Conference on Robots & Intelligent System (ICRIS)*, 272-275.

Aol. (n.d.). Retrieved from https://login.aol.com/?src=mail&client_id=dj0yJmk9VlN3cDhpNm1Id0szJmQ9WVdrOVdtRm1aMVU1Tm1zbWNHbzlNQS0tJnM9Y29uc3VtZXJzZWNyZXQmeD1mYQ--&crumb=pPgrPaOJNvs&lang=en-US&redirect_uri=https%3A%2F%2Foidc.mail.aol.com%2Fcallback&pspid=972825001&activity=mail-direc

Celestin, M., & Mathieu, C. (2016). Defeating MAC Address Randomization Through Timing Attacks. *WiSec: Proceedings of the 9th ACM Conference on Security & Privacy in Wireless and Mobile Networks*, 15-20.

P.Hoffman, & K.Fujiwara. (2024). Best Current Practice. *Internet Engineering Task Force*.