Decrypting RDP connections

The purpose of this lab is to give a taste of the power Wireshark has. In this lab, we will be working with RDP traffic. If one has the required key utilized between the two hosts for encrypting the traffic, Wireshark can deobfuscate the traffic for us.

When performing IR and analysis on Bob's machine, the IR team captured some PCAP of the RDP traffic they noticed from Bob's host to another host in the network. We have been asked to investigate the occurrence by our team lead. While combing his host for further evidence, you found an RDP-key hidden in a folder hive on Bob's host. After some research, we realize that we can utilize that key to decrypt the RDP traffic to inspect it.

Attempt to utilize the concepts from the Analysis Process sections to complete an analysis of the RDP-analysis.zip provided.

Tasks:

Task #1

`Open the rdp.pcapng file in Wireshark.`

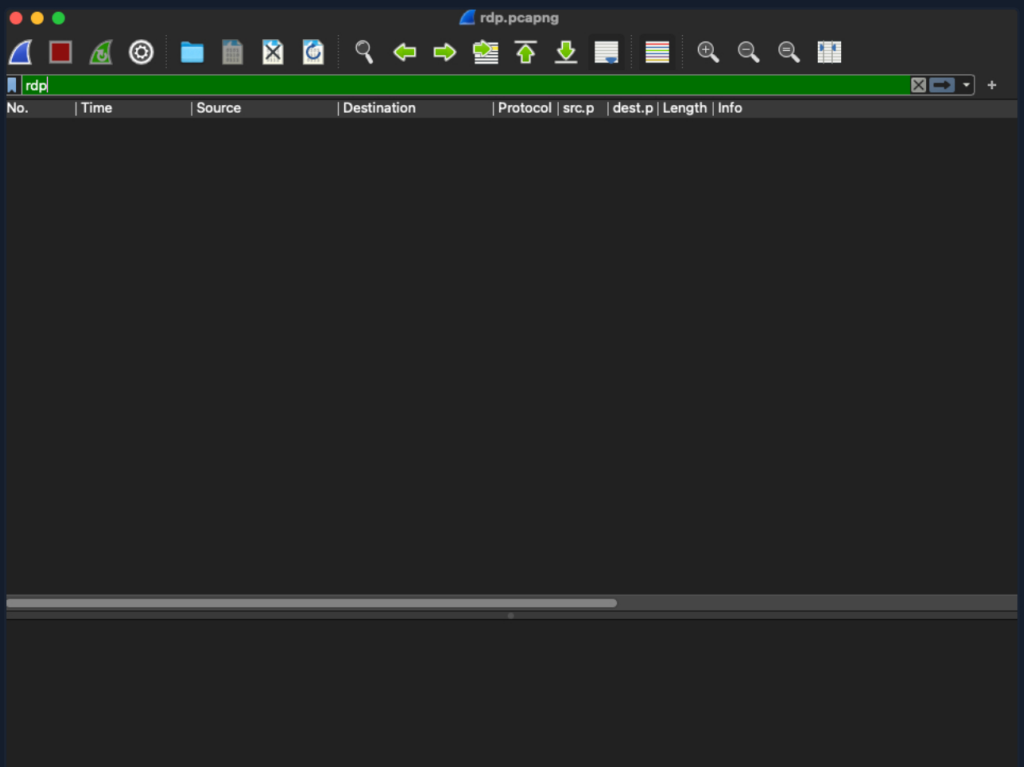
Unzip the zip file included in the optional resources and open it in Wireshark.

Task #2

`Analyze the traffic included.`

Take a minute to look at the traffic. Notice there is a lot of information here. We know our focus is on RDP, so let's take a second to filter on `rdp` and see what it returns.

RDP Filter



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My Workstation

OFFLINE

Start Instance

∞ / 1 spawns left

As it stands, not much can be seen, right? This is because RDP, by default, is utilizing TLS to encrypt the data, so we will not be able to see anything that happened with RDP traffic. How can we verify its existence in this file? One way is to filter on the well-known port RDP uses typically.

`Filter on port 3389 to determine if any RDP traffic encrypted or otherwise exists.`

▶ **Click to show answer**

We can at least verify that a session was established between the two hosts over TCP port 3389.

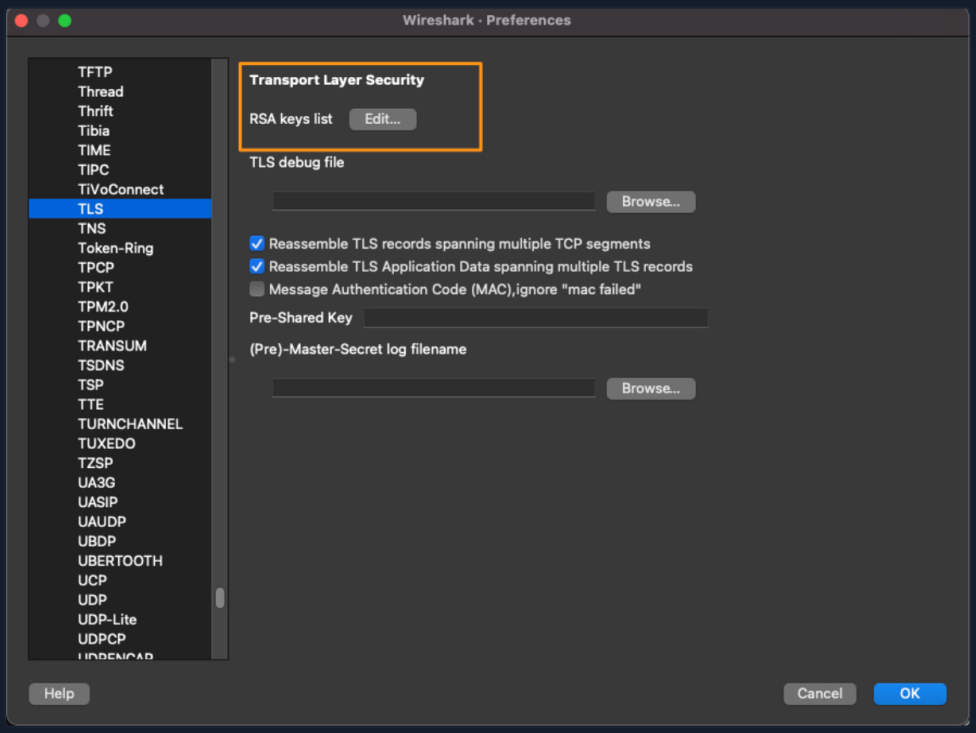
Task #3

`Provide the RDP-key to Wireshark so it can decrypt the traffic.`

Now, let's take this a step further and use the key we found to try and decrypt the traffic.

To apply the key in Wireshark:

1. go to Edit → Preferences → Protocols → TLS
2. On the TLS page, select Edit by RSA keys list → a new window will open.



3. Follow the steps below to import the RSA server key.

Import An RDP Key

Steps

Click the + to add a new key

Type in the IP address of the RDP server `10.129.43.29`

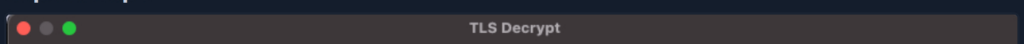
Type in the port used `3389`

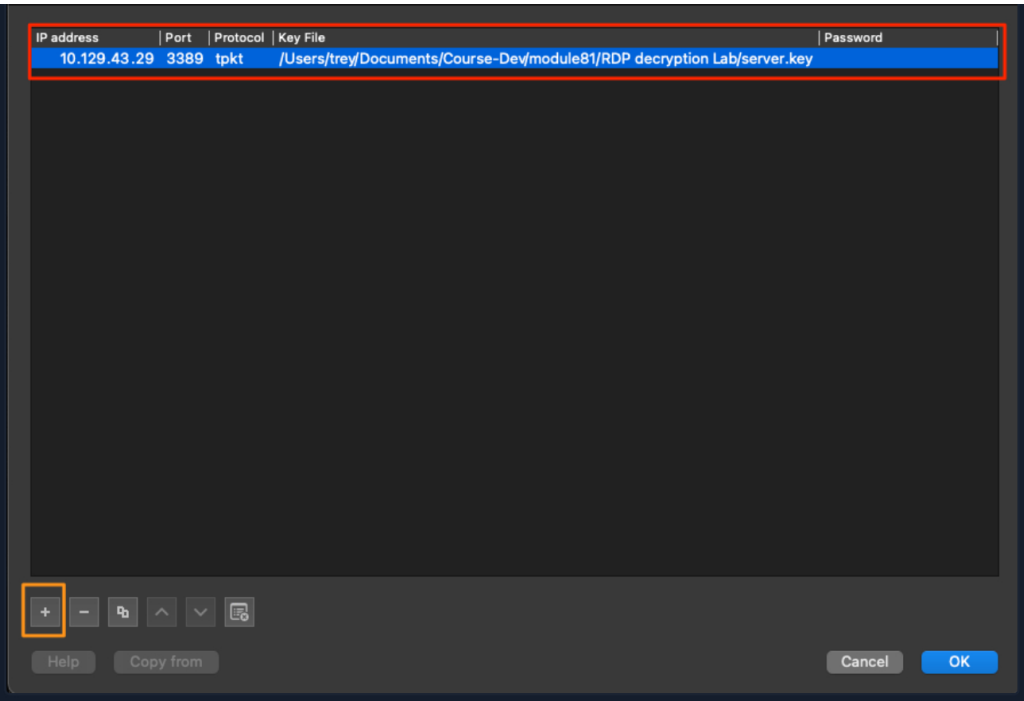
Protocol filed equals `tpkt` or `blank`.

Browse to the `server.key` file and add it in the key file section.

Save and refresh your pcap file.

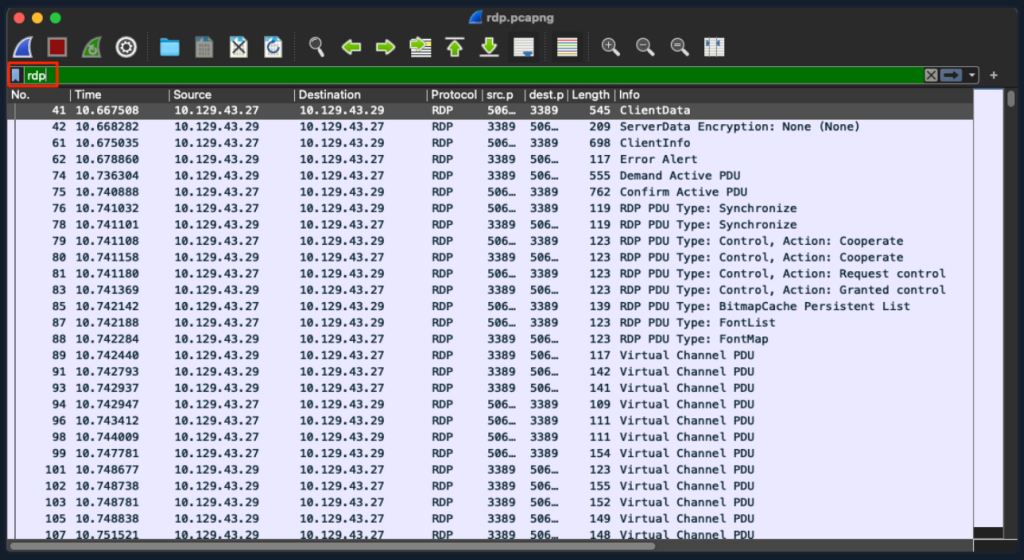
Import Steps





When filtering once again on RDP, we should see some traffic in the display.

RDP In The Clear



From here, we can perform an analysis of the RDP traffic. We can now follow TCP streams, export any potential objects found, and anything else we feel necessary for our investigation. This works because we acquired the RSA key used for encrypting the RDP session. The steps for acquiring the key were a bit lengthy, but the short of it is that if the RDP certificate is acquired from the server, `OpenSSL` can pull the private key out of it.

Perform Analysis of the Unencrypted Traffic

Now that we have broken RDP out of the TLS tunnel, what can we find? Perform the analysis steps and attempt to answer the questions below.

Questions:

What host initiated the RDP session with our server?

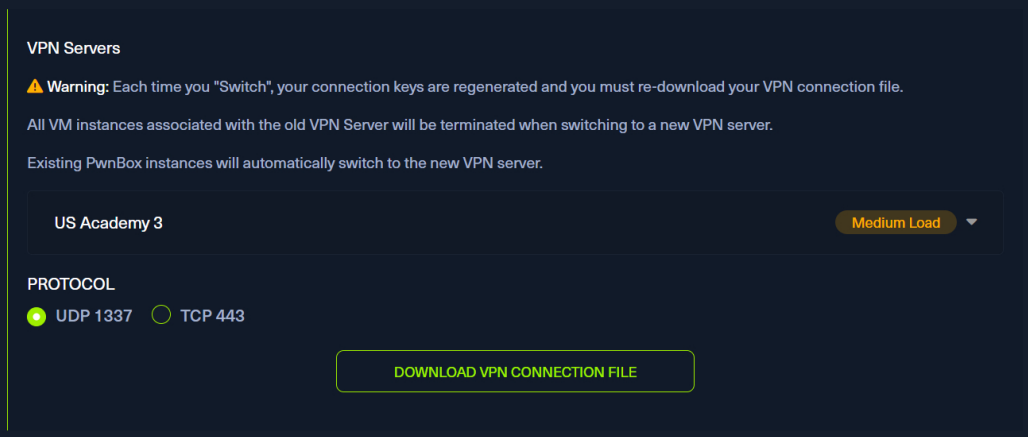
▶ **Click to show answer**

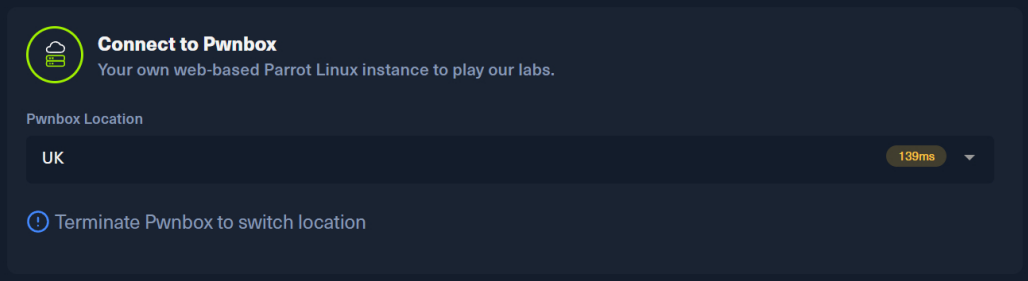
Which user account was used to initiate the RDP connection?

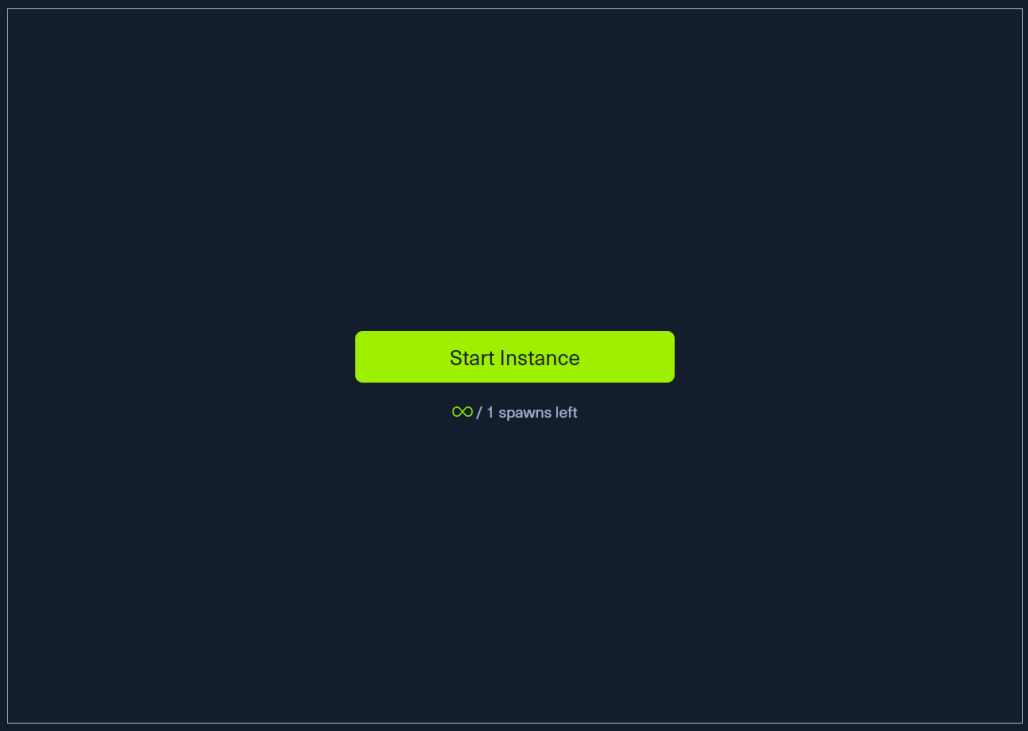
▶ **Click to show answer**

Summary:

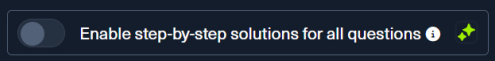
This lab was to serve as an example of what Wireshark can do with captured data and its plugins. Wireshark's capability to ingest information and illuminate the obscure is robust. Having the ability to decrypt data after ingestion is a powerful capability. This concept could be applied to any protocol that utilizes encryption as long as we have the key that will be utilized to establish the connections.





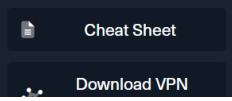


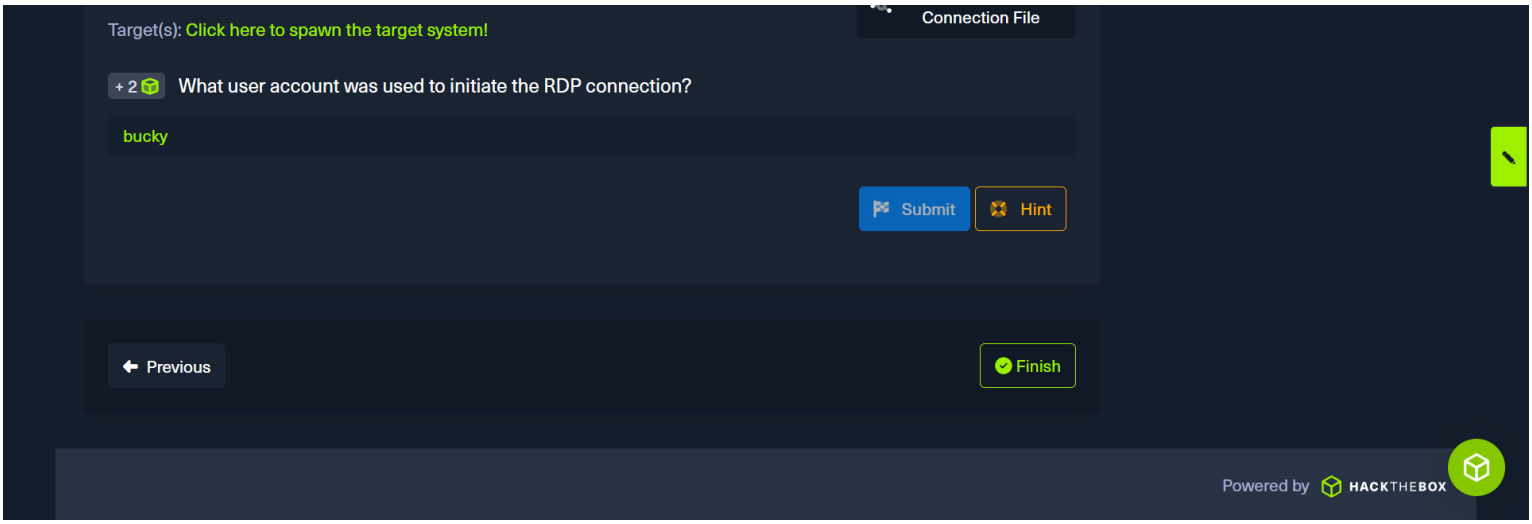
Waiting to start...



Questions

Answer the question(s) below to complete this Section and earn cubes!




Target(s): Click here to spawn the target system!
Connection File
+ 2
What user account was used to initiate the RDP connection?
bucky
Submit
Hint
Previous
Finish
Powered by HACKTHEBOX