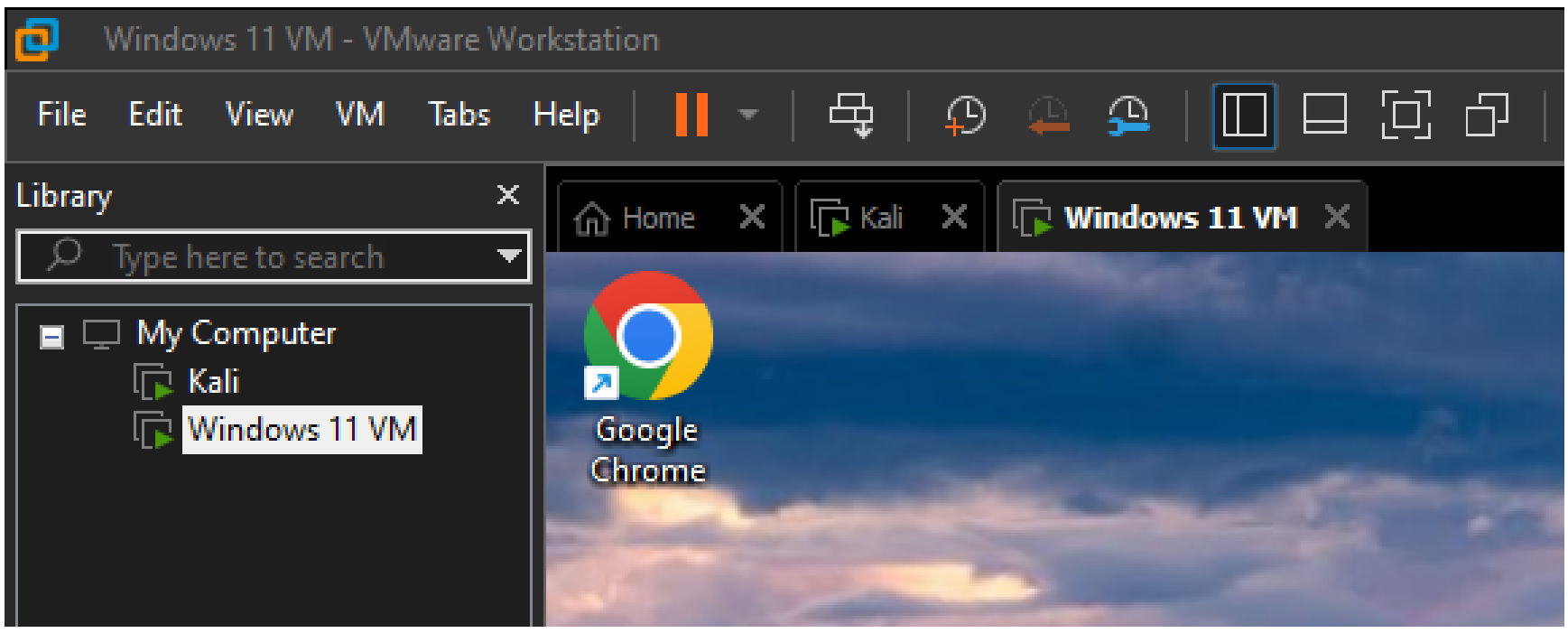
Nessus Vulnerability Management

I have 2 VMS set in place (Kali VM has the Nessus)

For My person lab what we are going to do is a basic scan to the "**Windows 11 VM**" Machine which is a VM that I downloaded to do labs related to Windows or AD, I won't be showing how to install it because that is out of the intentions of this lab.

The point of scanning this machine, is that I want to get some kind of result back. As we can see I have 2 VM's the "***Kali***" and the "***Windows 11 VM***"



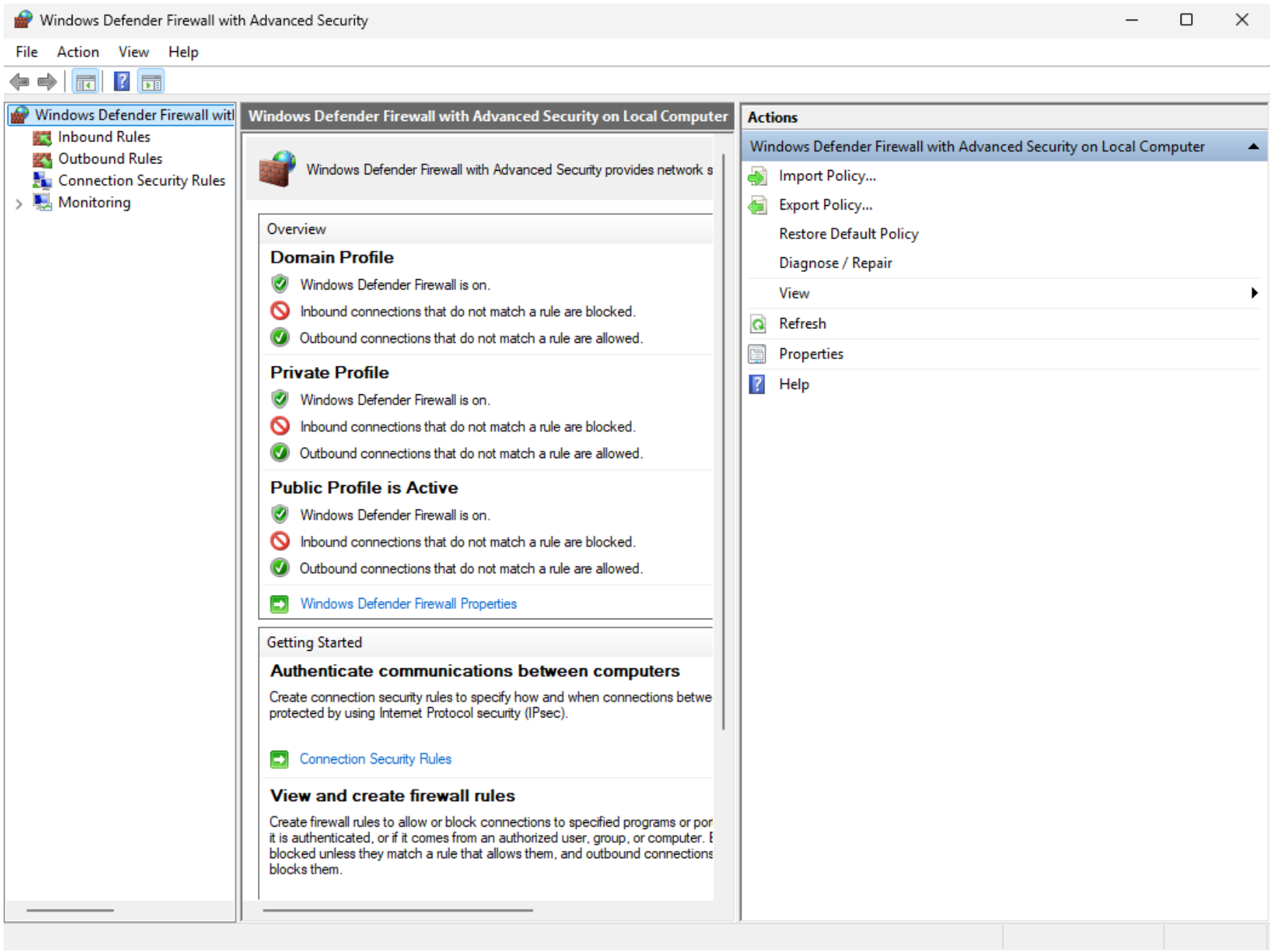
First of all what we are going to do is get the "***Windows 11 VM***" Ip (As well in order for the machine to communicate properly with the VM or just to be in the same network as my Physical Computer, the ***"Network Adapter"*** has to be configured to **Bridged**)

Now what we do, we have to go to the "***Windows 11 VM***" and get the IP address

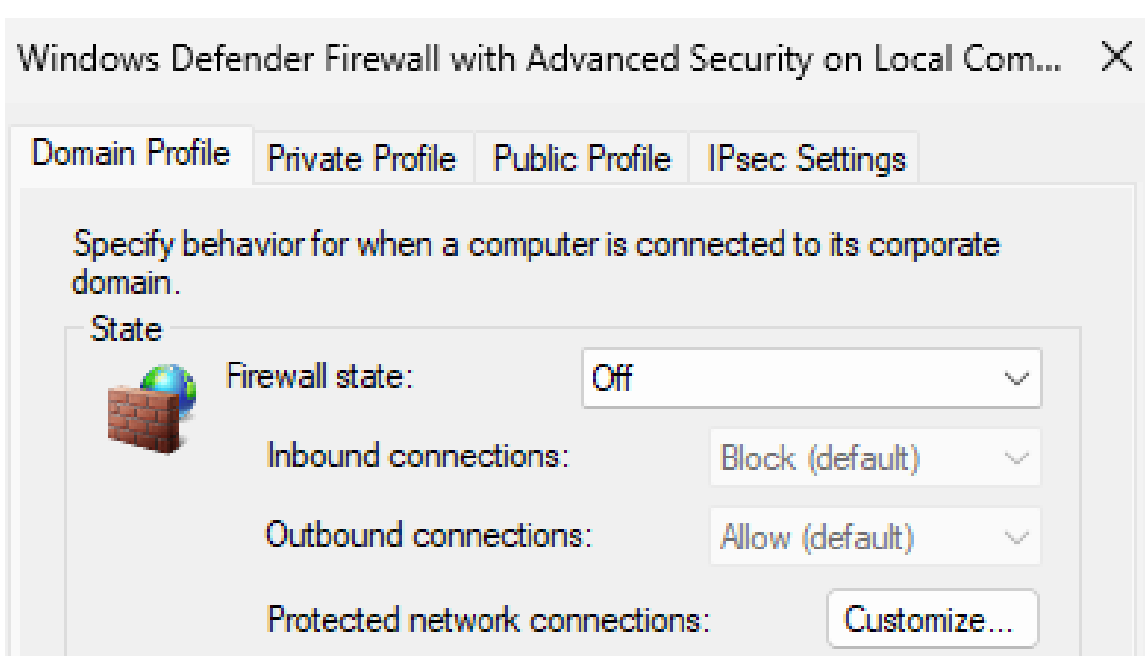
```
PS C:\Users\yaser\OneDrive\Desktop> ipconfig

Windows IP Configuration


Ethernet adapter Ethernet0:

   Connection-specific DNS Suffix  . : phub.net.cable.rogers.com
   IPv6 Address. . . . . . . . . . . : 2607:fea8:4fa0:ac00::5aeb
   IPv6 Address. . . . . . . . . . . : 2607:fea8:4fa0:ac00:cabe:4ae3:8133:52fe
   Temporary IPv6 Address. . . . . . : 2607:fea8:4fa0:ac00:6c71:49eb:60a3:a825
   Link-local IPv6 Address . . . . . : fe80::7b90:ae04:cd83:9cd9%13
   IPv4 Address. . . . . . . . . . . : 10.0.0.211
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . : fe80::c650:9cff:fea0:8e57%13
                                       10.0.0.1
```

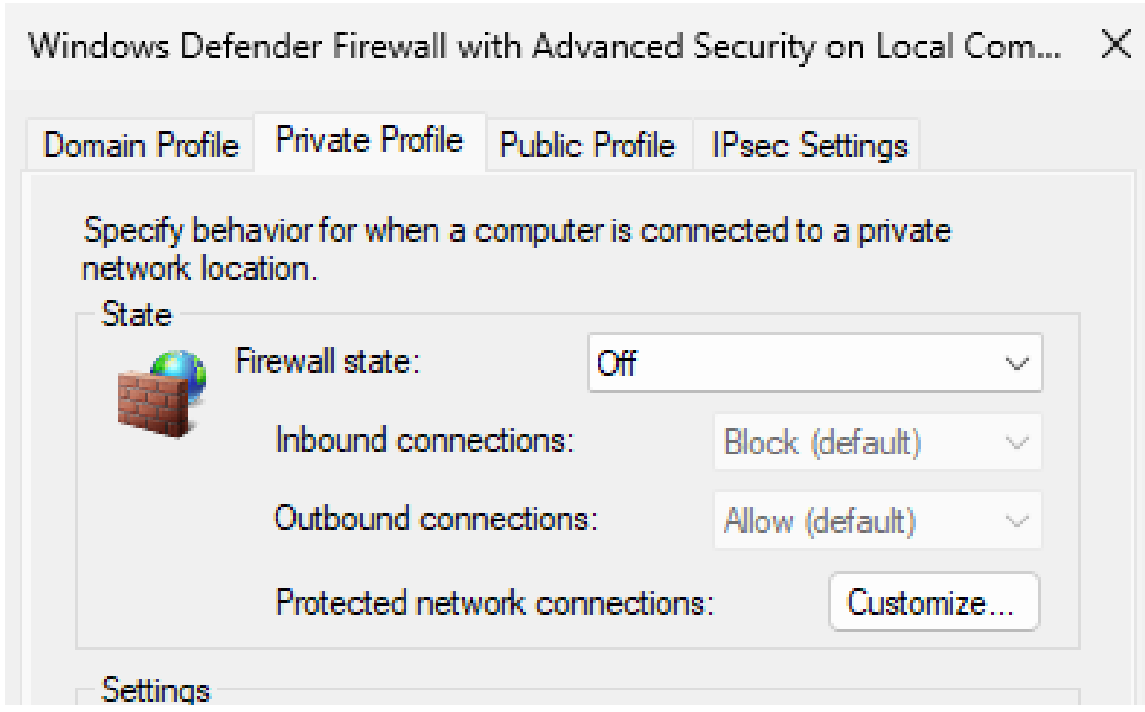
Now to make sure that we are able to ping the Windows VM, we have to disable the firewall in it

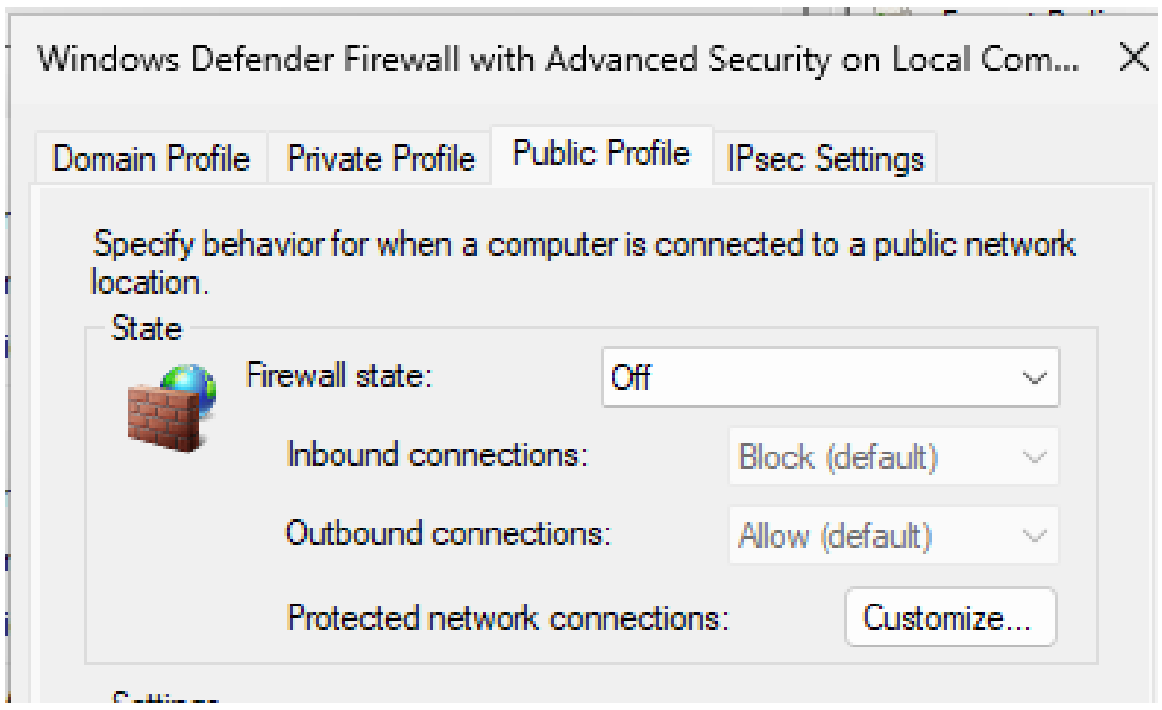
First of all, we go to "***wf.msc***" which is the Windows Firewall Console



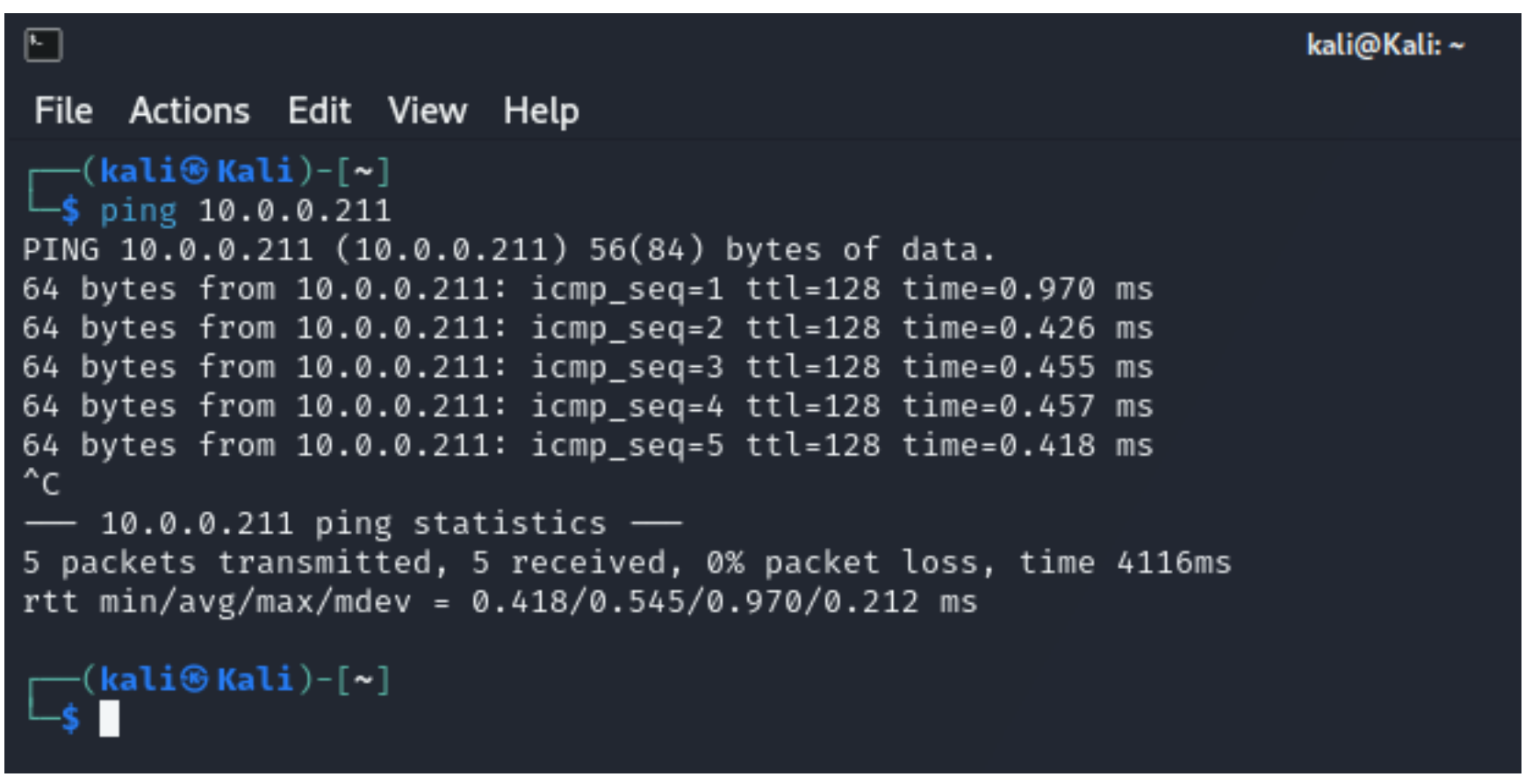
After that we have to turn all of these profiles off



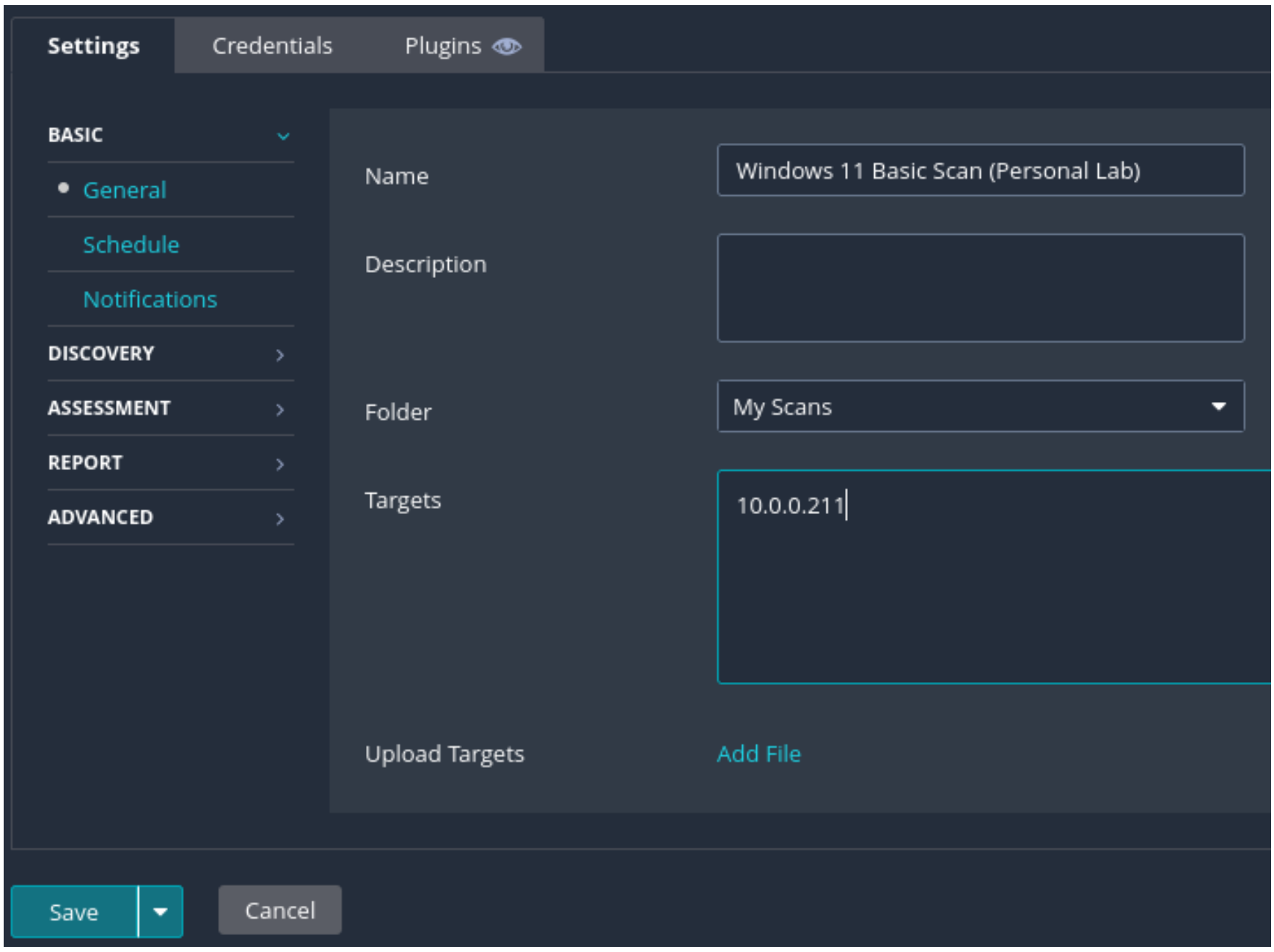




Now from my Physical Machine, lets ping the VM

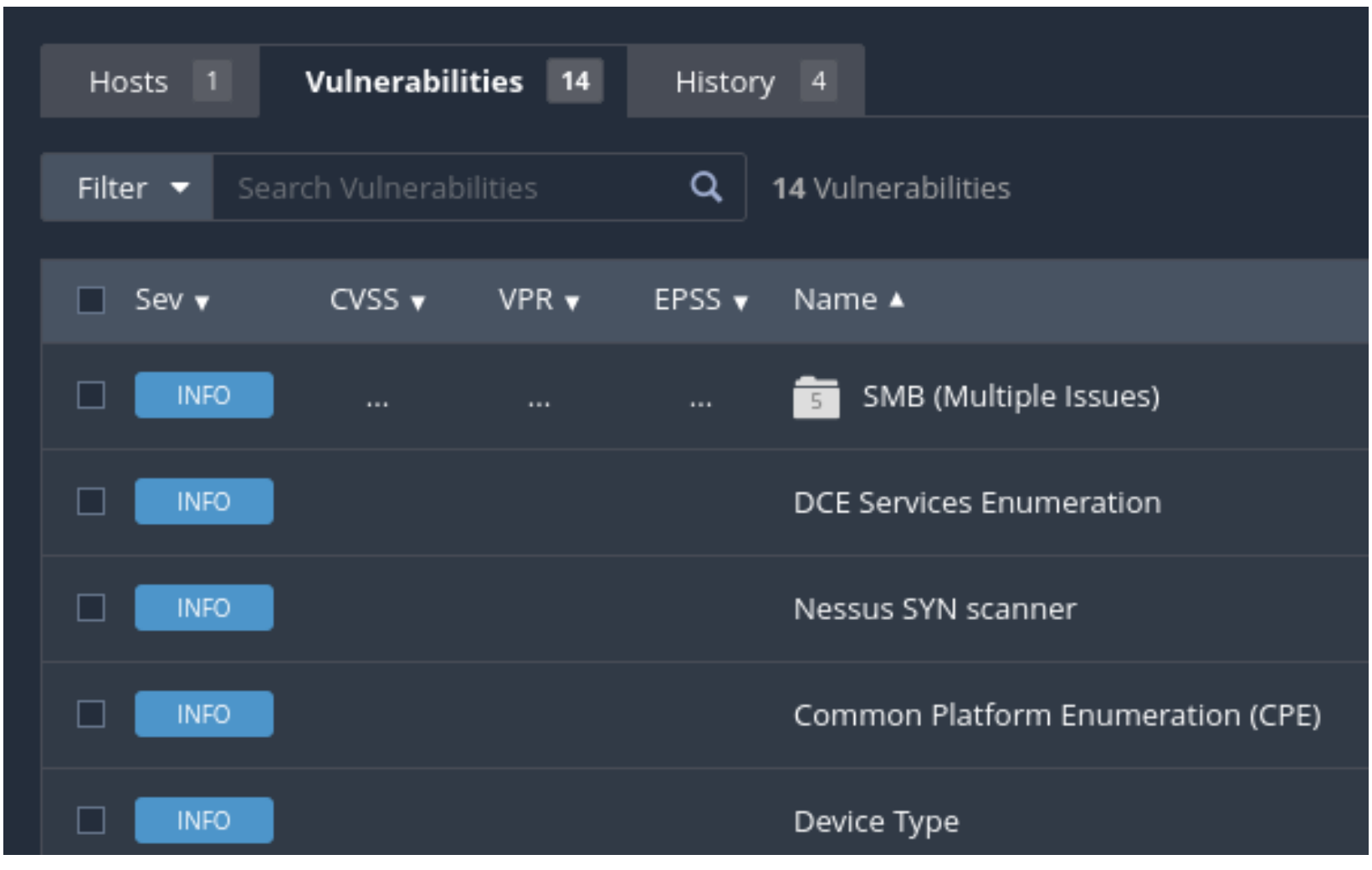


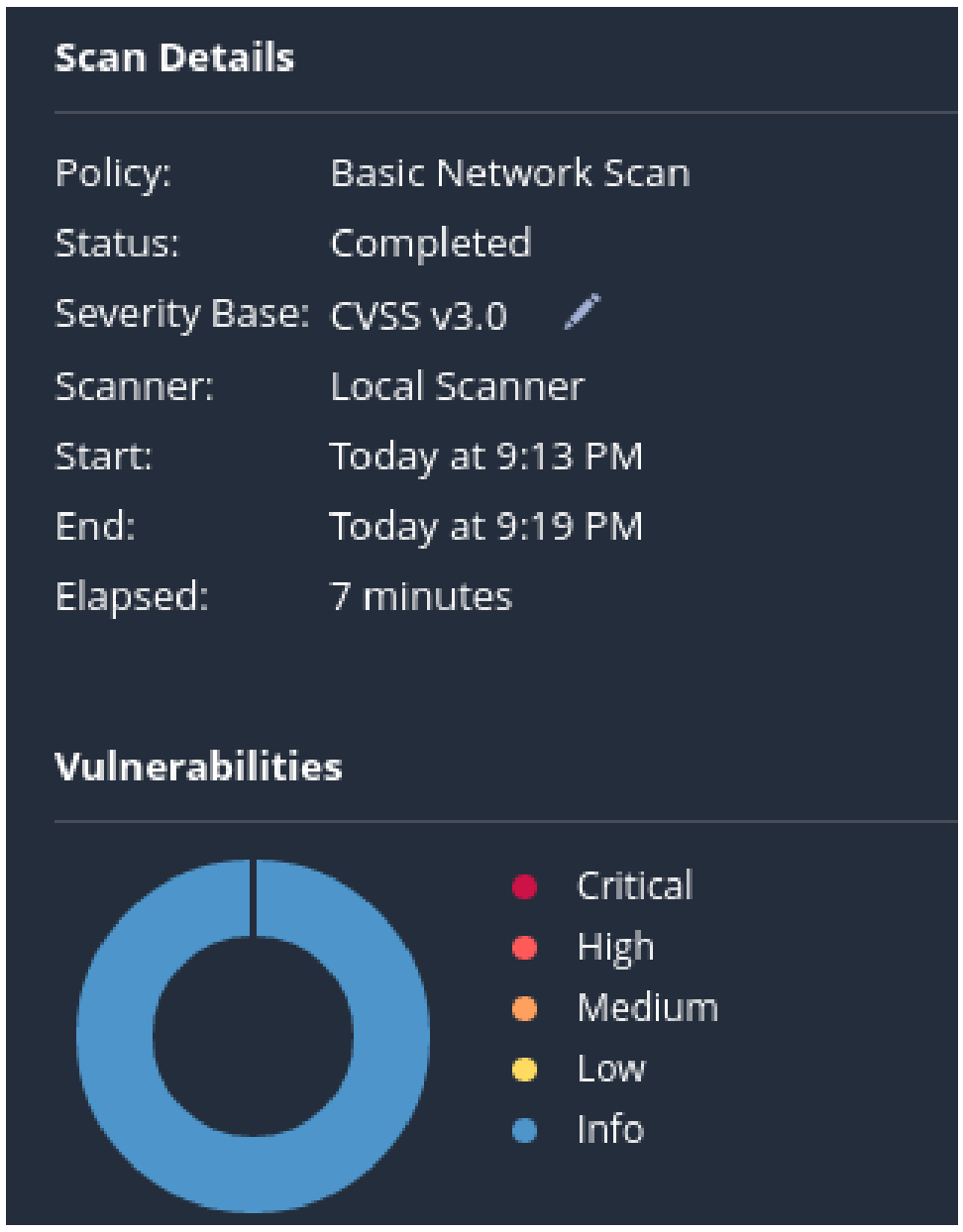
As we can see, we can ping the Windows VM from our Kali Machine. Now lets go over to Nessus to create a scan for the Windows VM



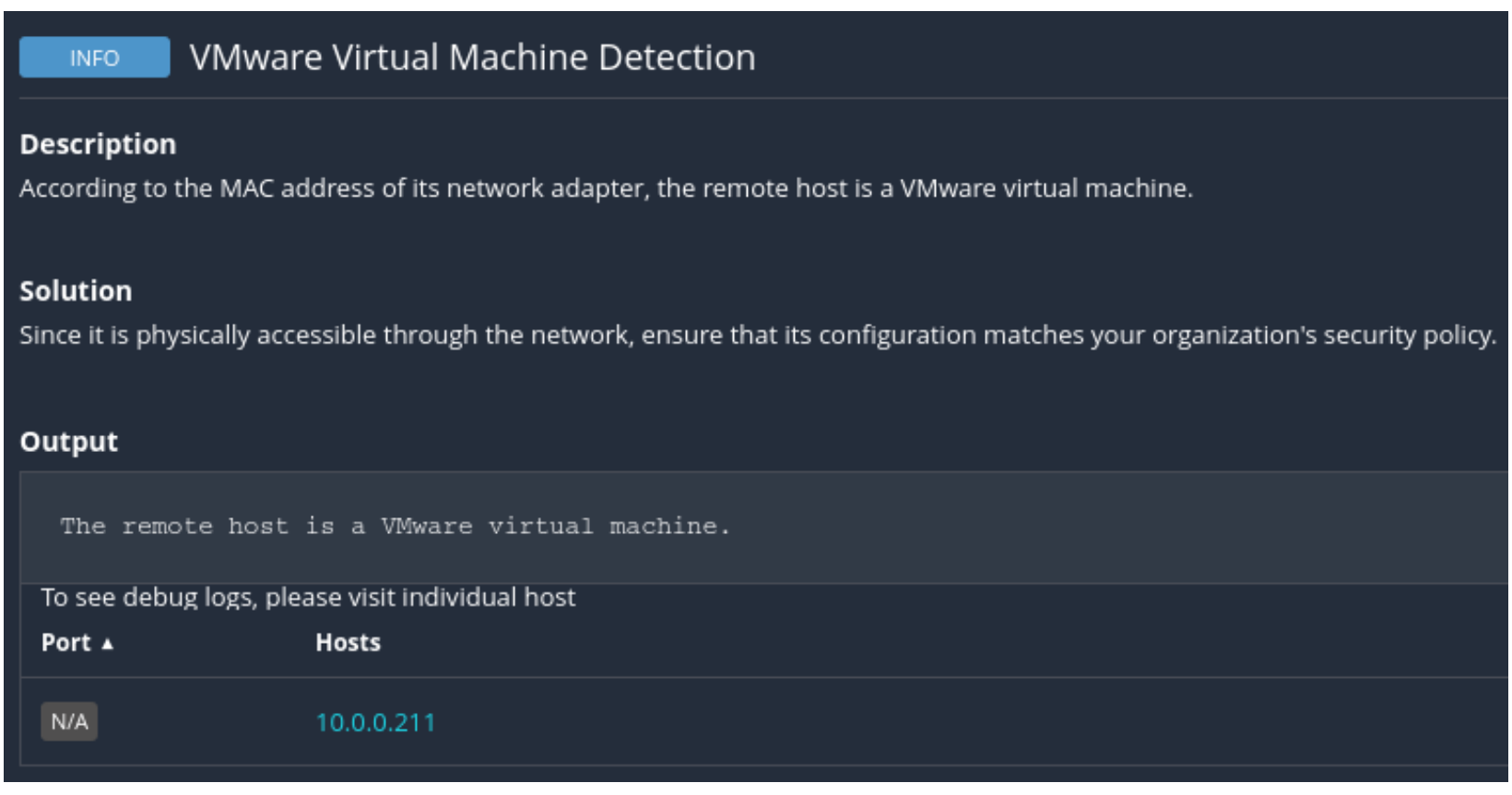
This was all I used for this lab. What I wanted to do is a simple port scan just to see if it's working and if we can any information to work on

After Running the script this is what I found in the Windows VM





As we can see this was the result of the scan, the findings are labeled as “INFO” they’re not necessarily vulnerabilities but they are information about the system that we should be aware of. Also I found some cool information from the scans



It found out that the Windows Machine that it was scanned is a VM from VMWARE.

INFO Traceroute Information

Description

Makes a traceroute to the remote host.

Output

```
For your information, here is the traceroute from 192.168.60.128 to 10.0.0.211 :
192.168.60.128
192.168.60.2
10.0.0.211

Hop Count: 2
```

To see debug logs, please visit individual host

Port ▲	Hosts
0 / udp	10.0.0.211

As we can see, we have the Traceroute information which means that this machine accepts ICMP requests

Windows 11 Basic Scan (Personal Lab) / Plugin #110723

‹ Back to Vulnerabilities

Hosts 1 | **Vulnerabilities 14** | History 1

INFO Target Credential Status by Authentication Protocol - No Credentials Provided

Description

Nessus was not able to successfully authenticate directly to the remote target on an available authentication protocol. Nessus was able to connect to the remote port and identify that the service running on the port supports an authentication protocol, but Nessus failed to authenticate to the remote service using the provided credentials. There may have been a protocol failure that prevented authentication from being attempted or all of the provided credentials for the authentication protocol may be invalid. See plugin output for error details.

Please note the following :

- This plugin reports per protocol, so it is possible for valid credentials to be provided for one protocol and not another. For example, authentication may succeed via SSH but fail via SMB, while no credentials were provided for an available SNMP service.

- Providing valid credentials for all available authentication protocols may improve scan coverage, but the value of successful authentication for a given protocol may vary from target to target depending upon what data (if any) is gathered from the target via that protocol. For example, successful authentication via SSH is more valuable for Linux targets than for Windows targets, and likewise successful authentication via SMB is more valuable for Windows targets than for Linux targets.

Output

```
SMB was detected on port 445 but no credentials were provided.
SMB local checks were not enabled.
```

To see debug logs, please visit individual host

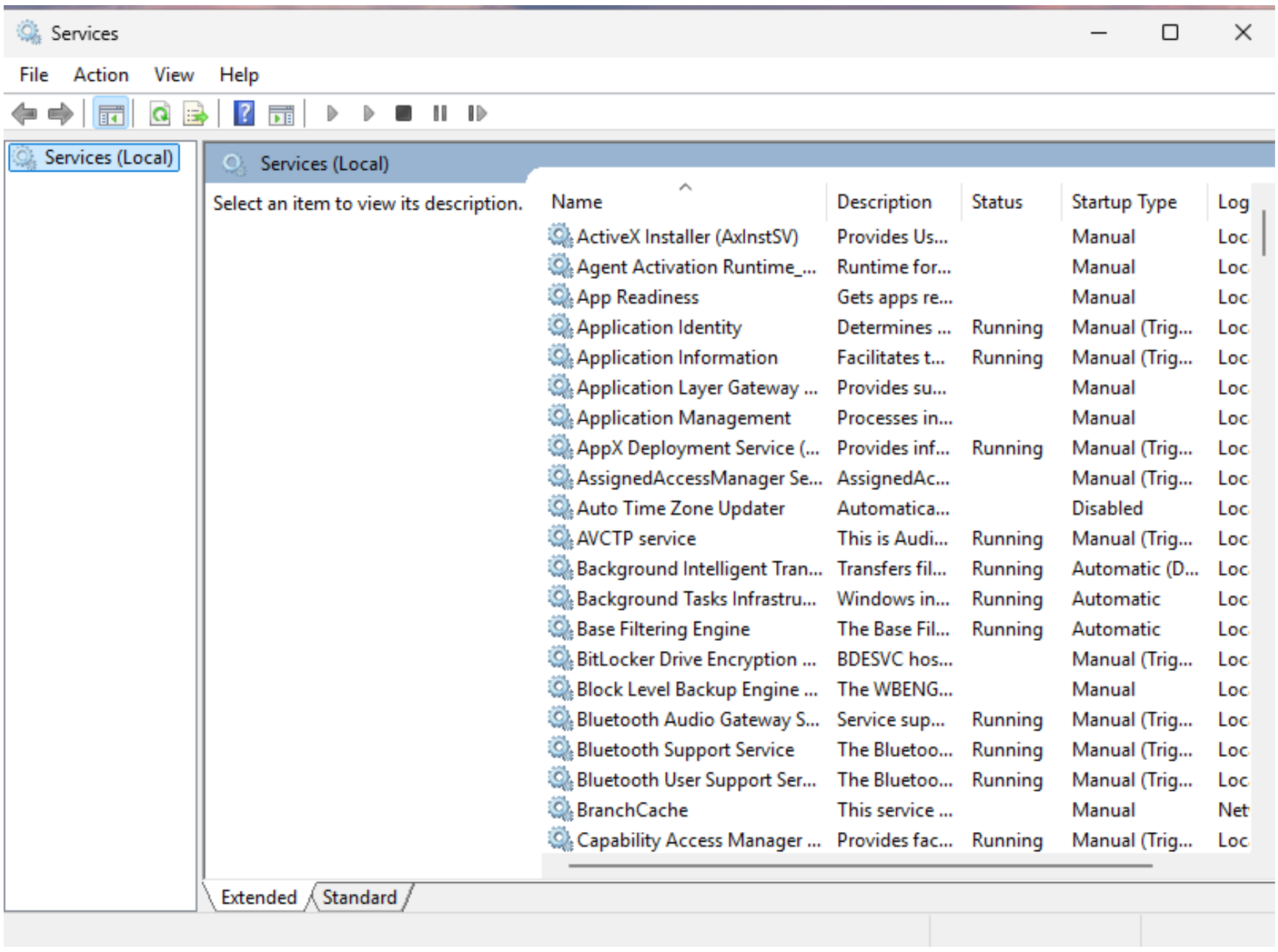
Port ▲	Hosts
N/A	10.0.0.211

We can see that "***SMB***" was detected and is listening on Port 445, also in the description says that Nessus was not able to authenticate to the remote target, this is only because we did not provide any credentials to the

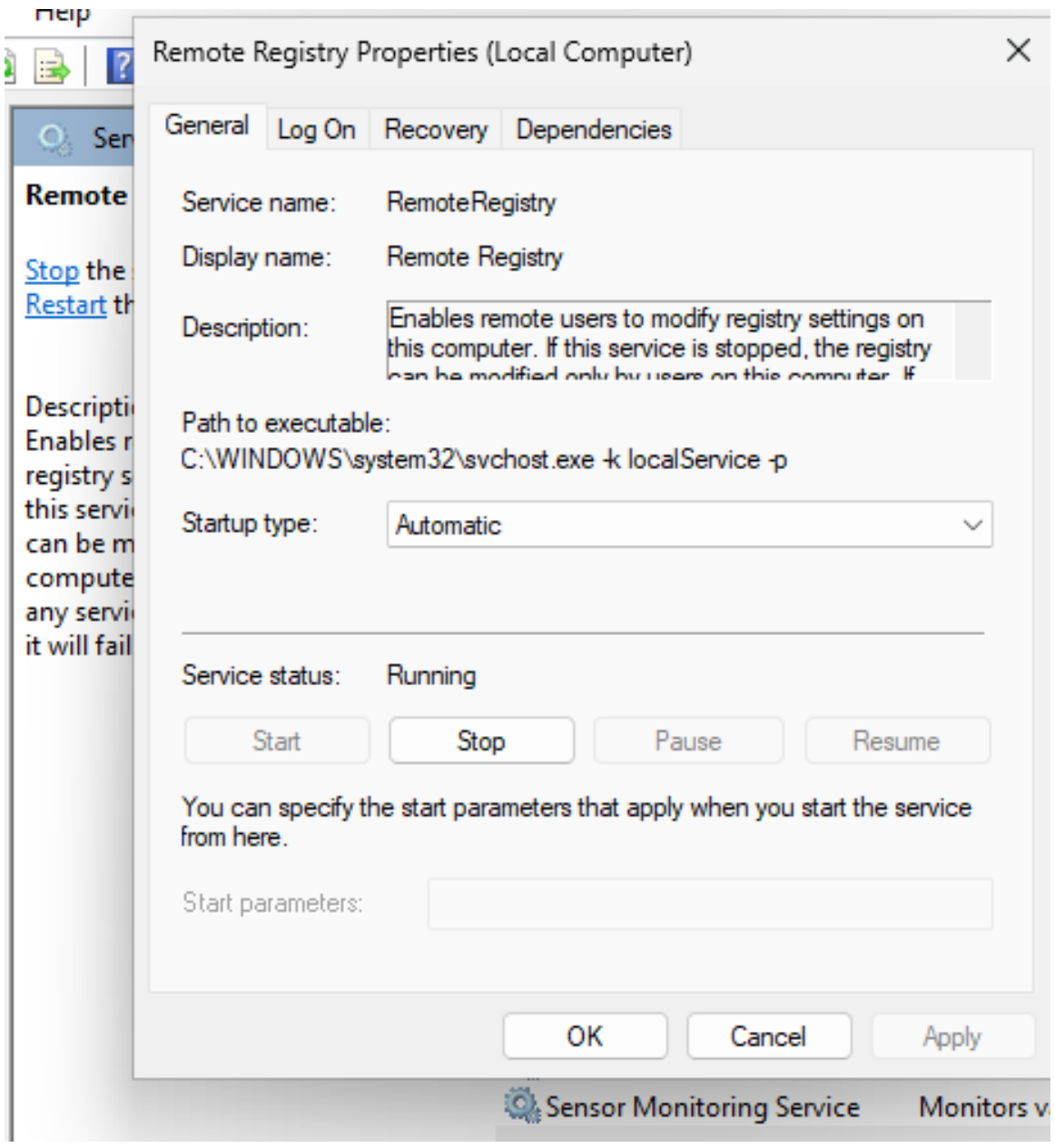
machine

Now for the next scan, what I will do is I will make sure that the Windows WM is able to accept authenticated scans, as well, we will provide credentials to Nessus.

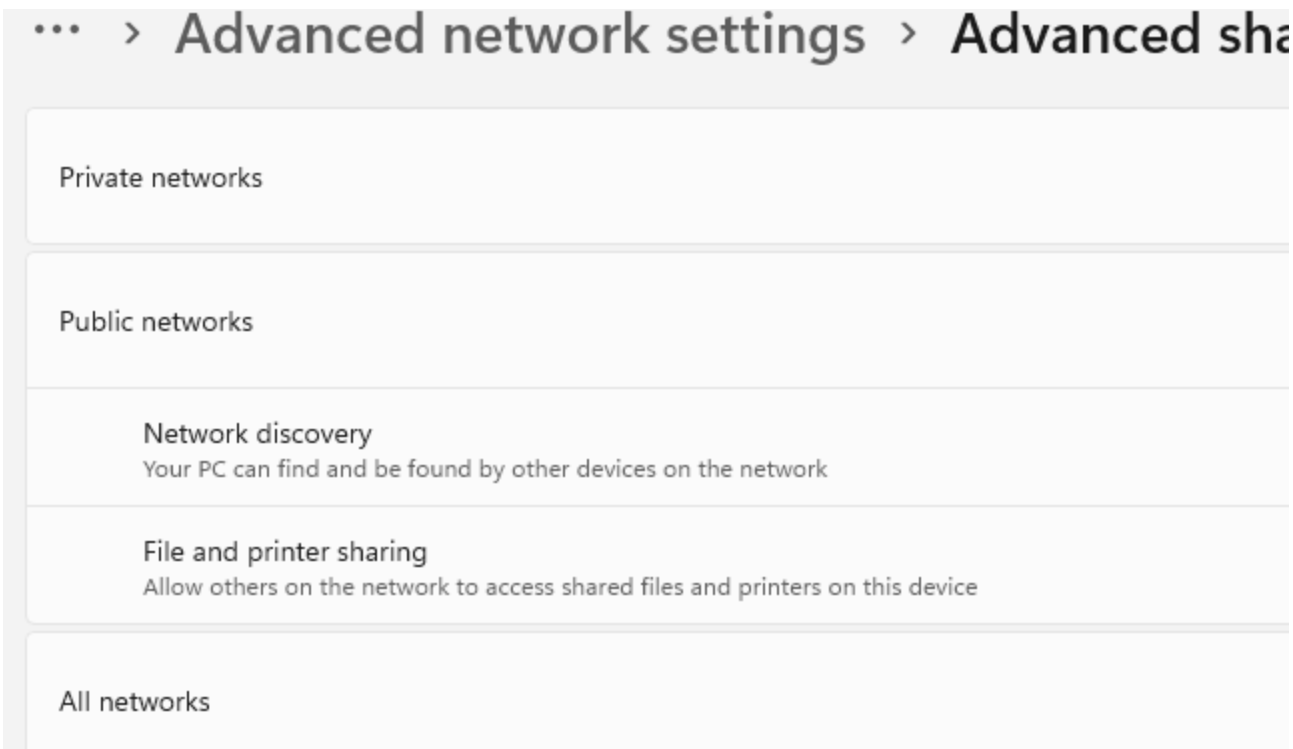
What I did is I went to "***services***"



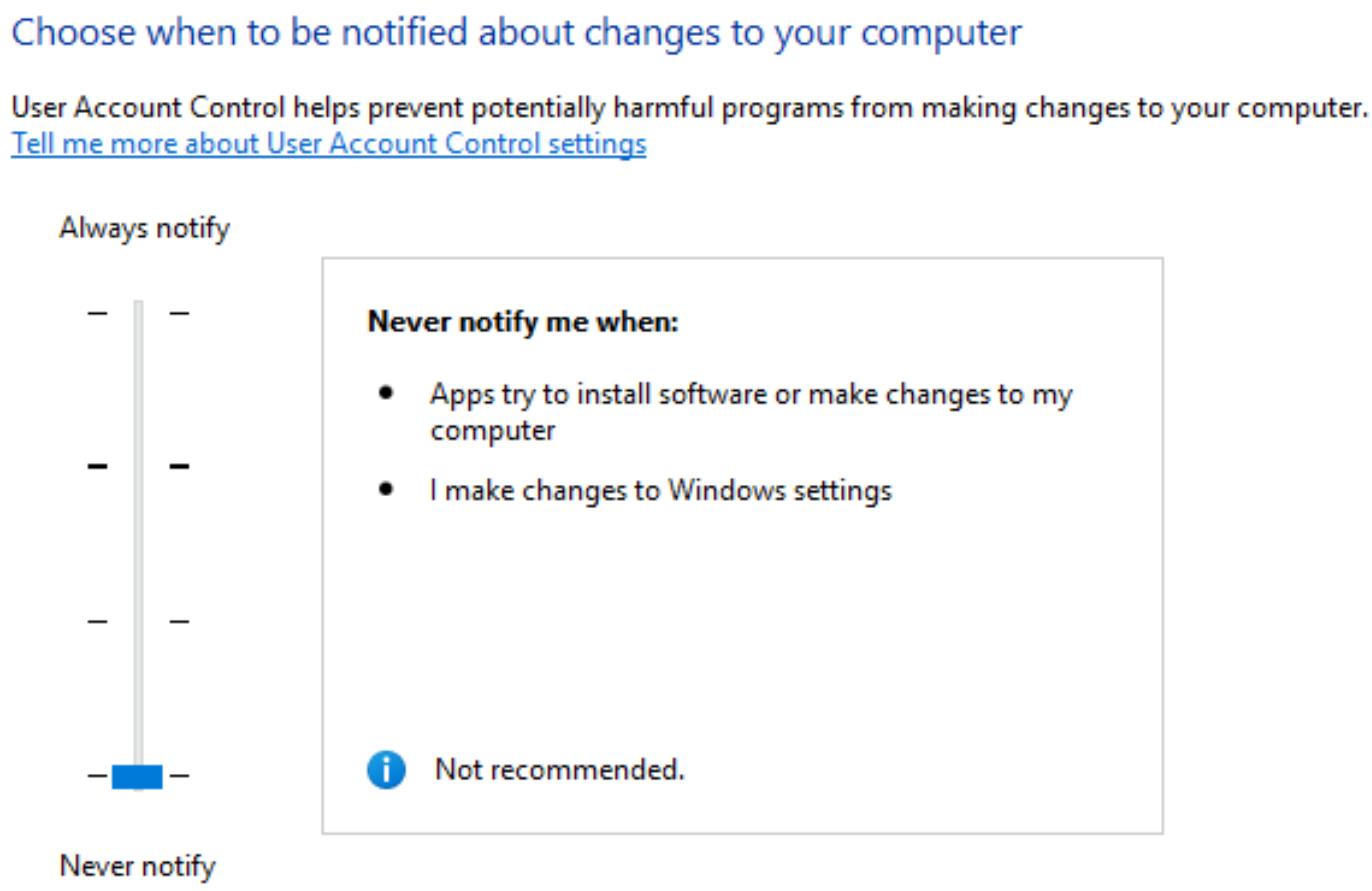
First what we allow is the "***Remote Registry***", it allows for the scanner to connect to the computers registry and go through the registry and look for poor/insecure configurations



Also I double checked if the file and printer sharing, and Network discovery was on, which it was.



I disabled this, which is not recommended at all to do, but I did it only because we need this off in order to scan the machine with no issues.

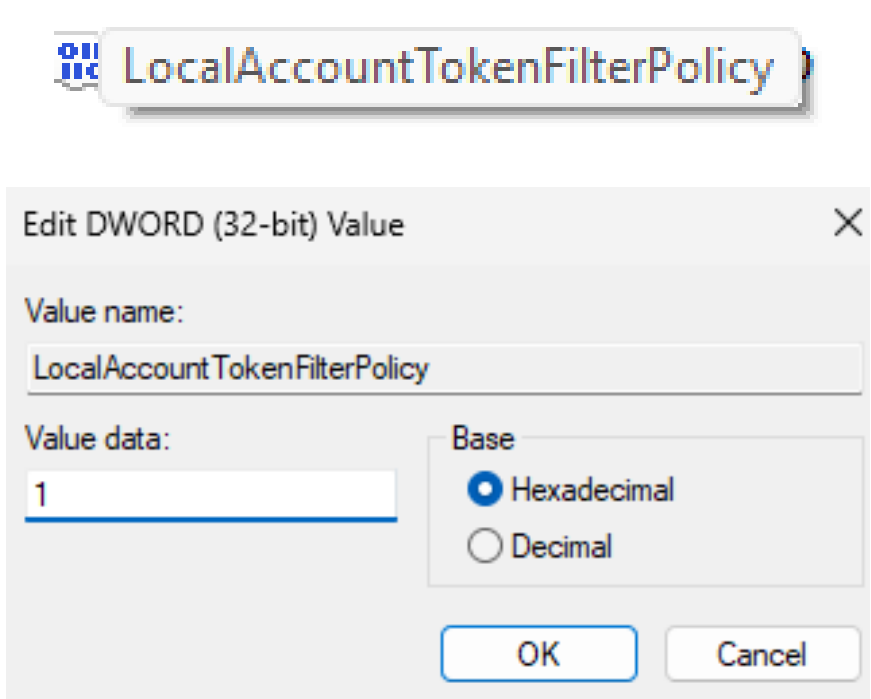


I went to the registry editor, this is just because we want to add a key and this is supposed to further disable user account control for the remote account

We went to this directory in the registry

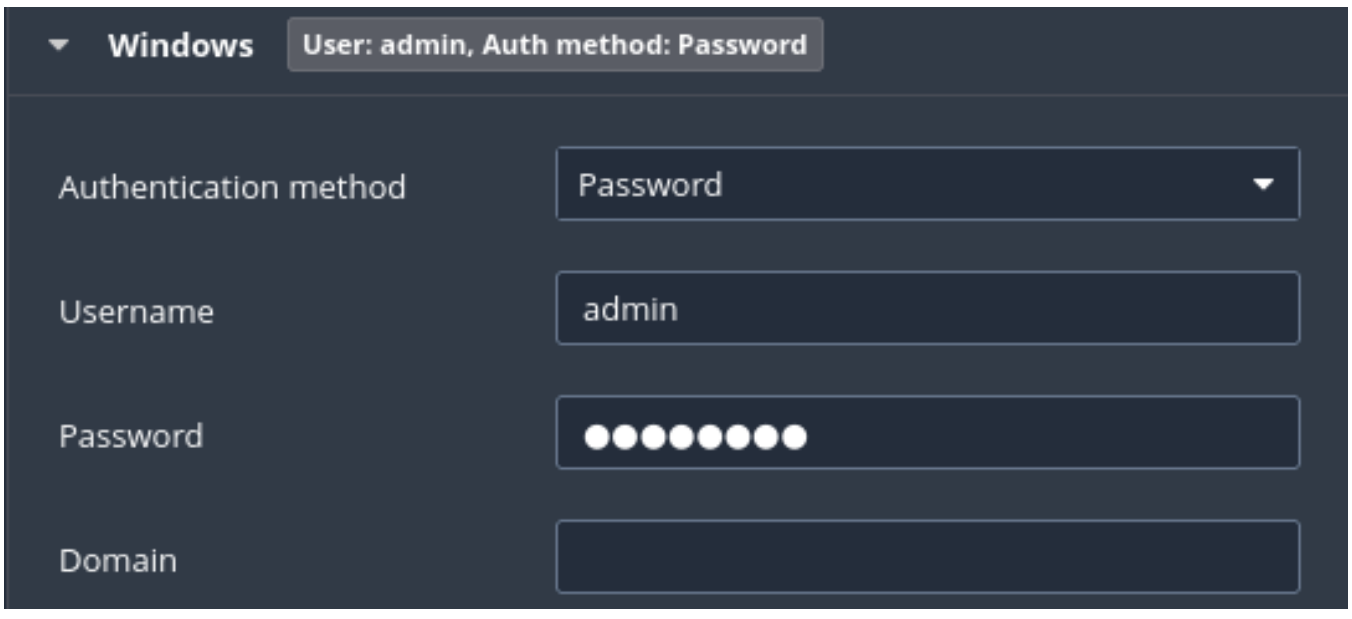
```
Computer\HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Policies\System
```

We added this account token and the, and we set the value to 1, it was originally 0



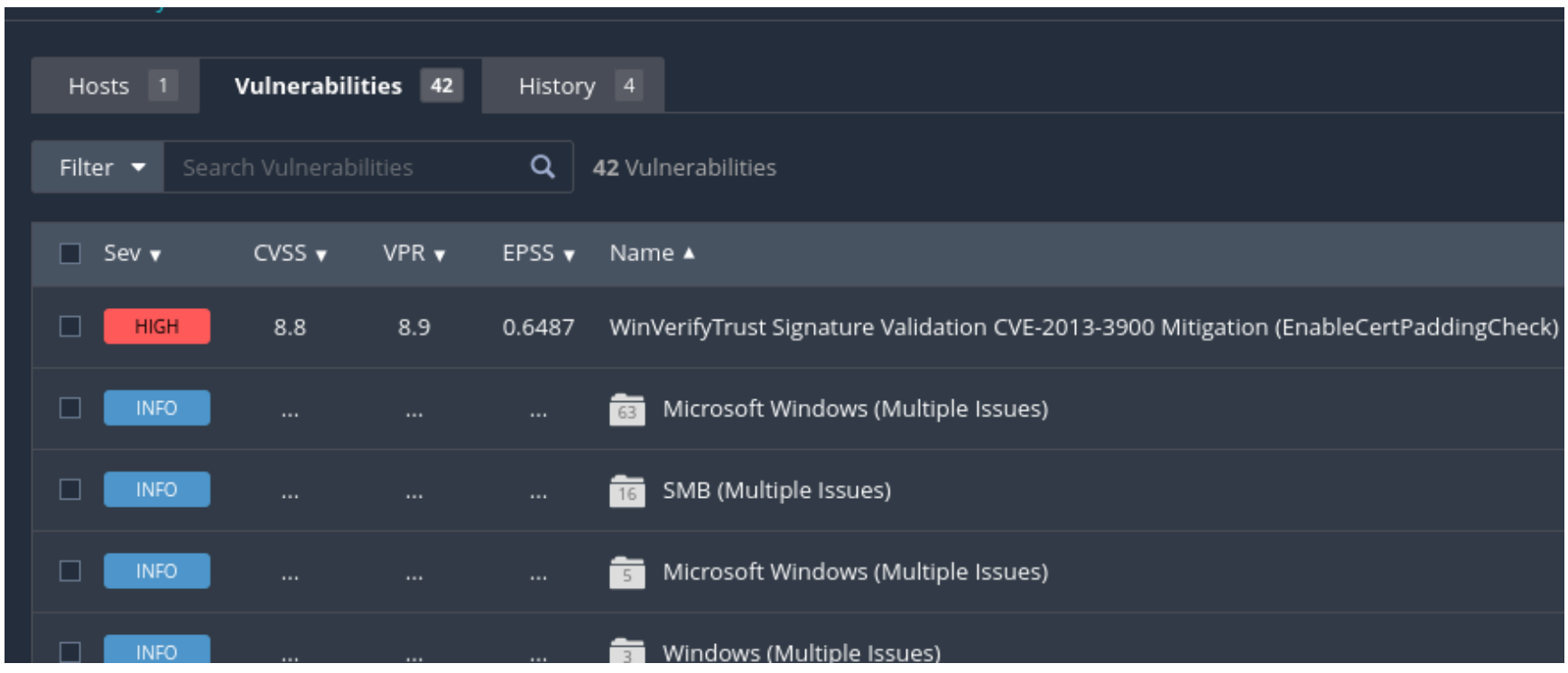
After that I just restarted the machine just to make sure that all the configurations that I made in the VM were set

Now we're ready to scan the machine again! What I did is that I edited the previous scan and I added the credentials to Nessus



After running the scan this was the result!

Because we used the credentials we were able to look for vulnerabilities inside the machine because we were authenticated in the machine, this way we were able to get more “info” based vulnerabilities



We found a “High” vulnerability!

The CVE-2013-3900 is basically a vulnerability is a remote code execution vulnerability that exists because just the way “***WinVerifyTrust***” authenticates.

In a attack scenario, the threat actor may send a fishing email and if the user opens this “***PE***” file, which in short, comparing to “***.EXE***”, are files that contain important information for the operating system to correctly load the executable code, and “***.EXE***” we know it is the file format for a executable file.

For more information about this vulnerability, her is the windows security updates link:

https://msrc.microsoft.com/update-guide/vulnerability/CVE-2013-3900

Windows 11 Basic Scan (Personal Lab) / Plugin #166555

‹ Back to Vulnerabilities

Hosts 1 | **Vulnerabilities** 42 | History 4

HIGH WinVerifyTrust Signature Validation CVE-2013-3900 Mitigation (EnableCertPaddingCheck)

Description

The remote system may be in a vulnerable state to CVE-2013-3900 due to a missing or misconfigured registry keys:
- HKEY_LOCAL_MACHINE\Software\Microsoft\Cryptography\Wintrust\Config\EnableCertPaddingCheck
- HKEY_LOCAL_MACHINE\Software\Wow6432Node\Microsoft\Cryptography\Wintrust\Config\EnableCertPaddingCheck An unauthenticated, remote attacker could exploit this, by sending specially crafted requests, to execute arbitrary code on an affected host.

Solution

Add and enable registry value EnableCertPaddingCheck:
- HKEY_LOCAL_MACHINE\Software\Microsoft\Cryptography\Wintrust\Config\EnableCertPaddingCheck

Additionally, on 64 Bit OS systems, Add and enable registry value EnableCertPaddingCheck:

- HKEY_LOCAL_MACHINE\Software\Wow6432Node\Microsoft\Cryptography\Wintrust\Config\EnableCertPaddingCheck

See Also

https://msrc.microsoft.com/update-guide/vulnerability/CVE-2013-3900
http://www.nessus.org/u?9780b9d2

Output

```
Nessus detected the following potentially insecure registry key configuration:
   - Software\Microsoft\Cryptography\Wintrust\Config\EnableCertPaddingCheck is not present in the registry.
   - Software\Wow6432Node\Microsoft\Cryptography\Wintrust\Config\EnableCertPaddingCheck is not present in the registry.
```

To see debug logs, please visit individual host

Port ▲	Hosts
445 / tcp / cifs	10.0.0.211

As well when running this scan it found the device hostname

Windows 11 Basic Scan (Personal Lab) / Plugin #55472

‹ Back to Vulnerabilities

Hosts 1 | **Vulnerabilities** 42 | History 4

INFO Device Hostname

Description

This plugin reports a device's hostname collected via SSH or WMI.

Output

```
Hostname : WINDOWSXPLOIT
  WINDOWSXPLOIT (WMI)
```

To see debug logs, please visit individual host

Port ▲	Hosts
N/A	10.0.0.211

Also, it found my OS version

Windows 11 Basic Scan (Personal Lab) / Plugin #11936

‹ Back to Vulnerabilities

Hosts 1 | **Vulnerabilities** 42 | History 4

INFO OS Identification

Description

Using a combination of remote probes (e.g., TCP/IP, SMB, HTTP, NTP, SNMP, etc.), it is possible to guess the name of the remote operating system in use. It is also possible sometimes to guess the version of the operating system.

Output

```
Remote operating system : Microsoft Windows 11 Pro Build 26100
Confidence level : 101
Method : Misc


The remote host is running Microsoft Windows 11 Pro Build 26100
```

To see debug logs, please visit individual host

Port ▲	Hosts
N/A	10.0.0.211

And lastly, another information that I thought it was really cool is that found all the usernames in the system

Hosts 1 | **Vulnerabilities** 42 | History 4

INFO **SMB Use Host SID to Enumerate Local Users**

Description

Using the host security identifier (SID), Nessus was able to enumerate local users on the remote Windows system.

Output

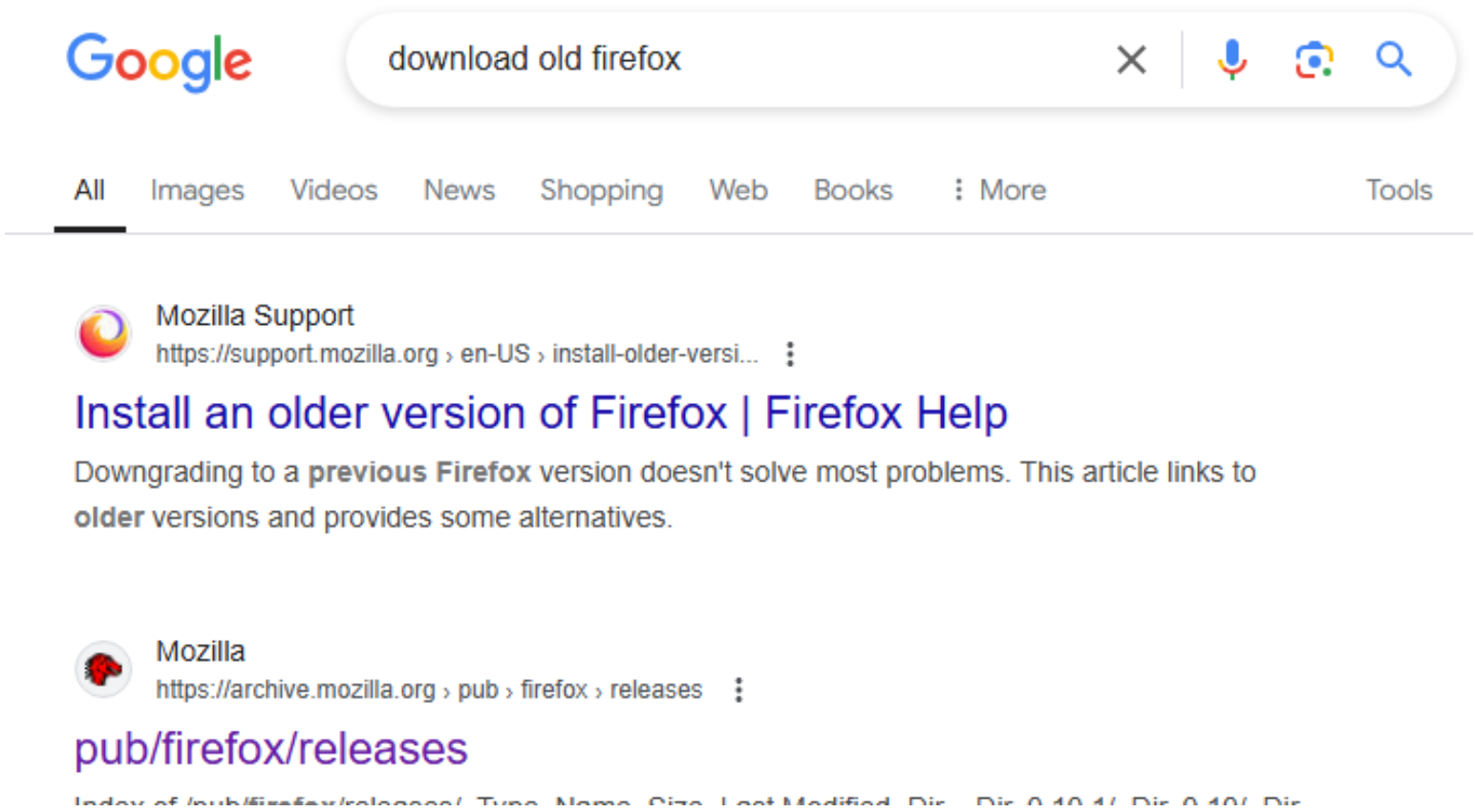
```
  - Administrator (id 500, Administrator account)
  - Guest (id 501, Guest account)
  - yaser (id 1001)
  - admin (id 1002)

Note that, in addition to the Administrator, Guest, and Kerberos
accounts, Nessus has enumerated local users with IDs between
1000 and 1200. To use a different range, edit the scan policy
and change the 'Enumerate Local Users: Start UID' and/or 'End UID'
preferences under 'Assessment->Windows' and re-run the scan. Only
UIDs between 1 and 2147483647 are allowed for this range.
```

To see debug logs, please visit individual host

Port ▲	Hosts
445 / tcp / cifs	10.0.0.211

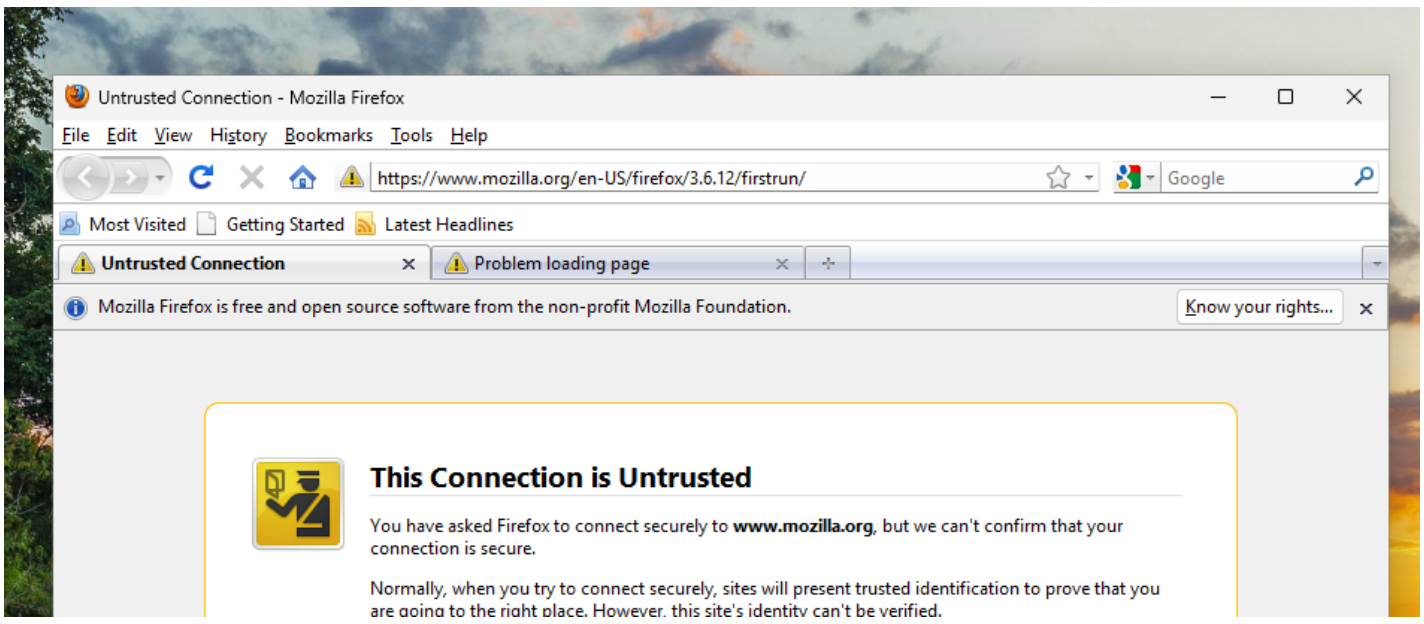
Now for the last part, as my Windows VM seemed that it did not have a lot of vulnerabilities or that we did not see more medium to critical vulnerabilities, what I decided is downloading a very or software just to see if Nessus would find any vulnerabilities associated with it

For that I just downloaded a old firefox



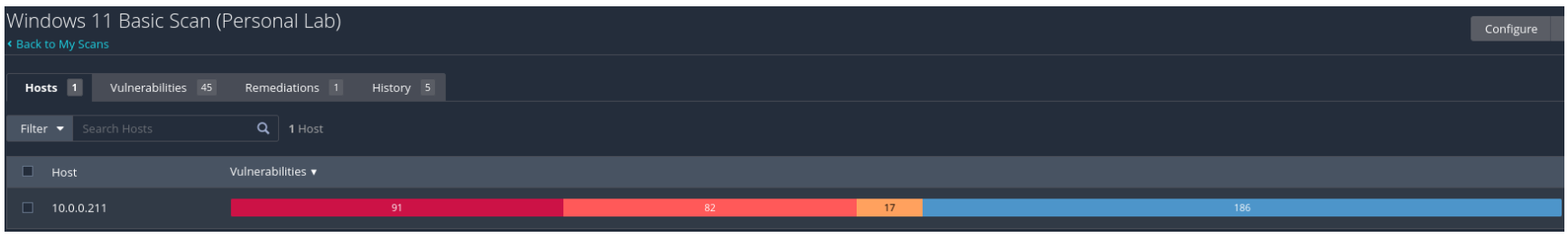
I went to the website and I downloaded a random old one

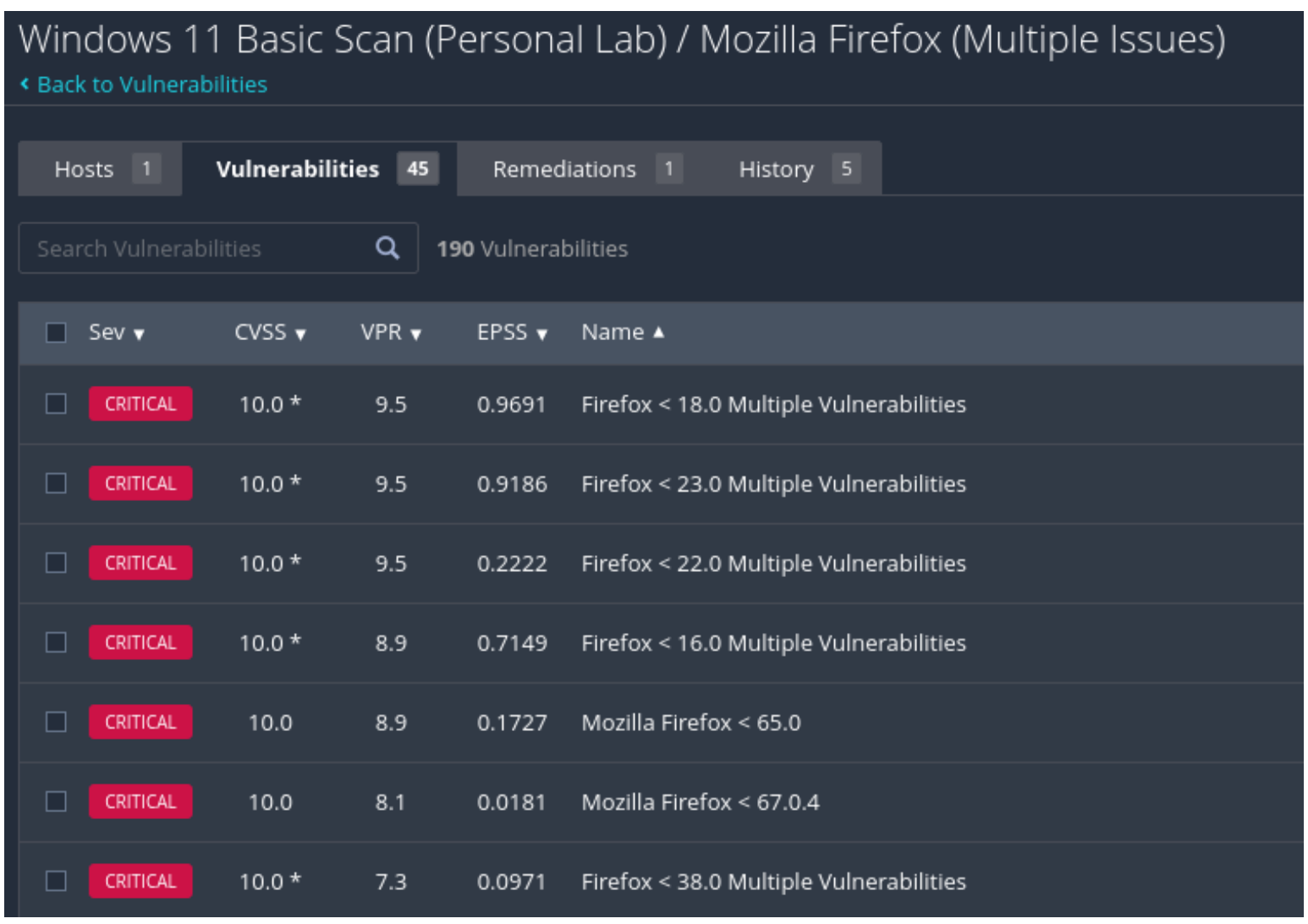
This is how it looks (in the website it says that it was last updated in 2023 but its a pretty old Firefox, here is the GUI for example)

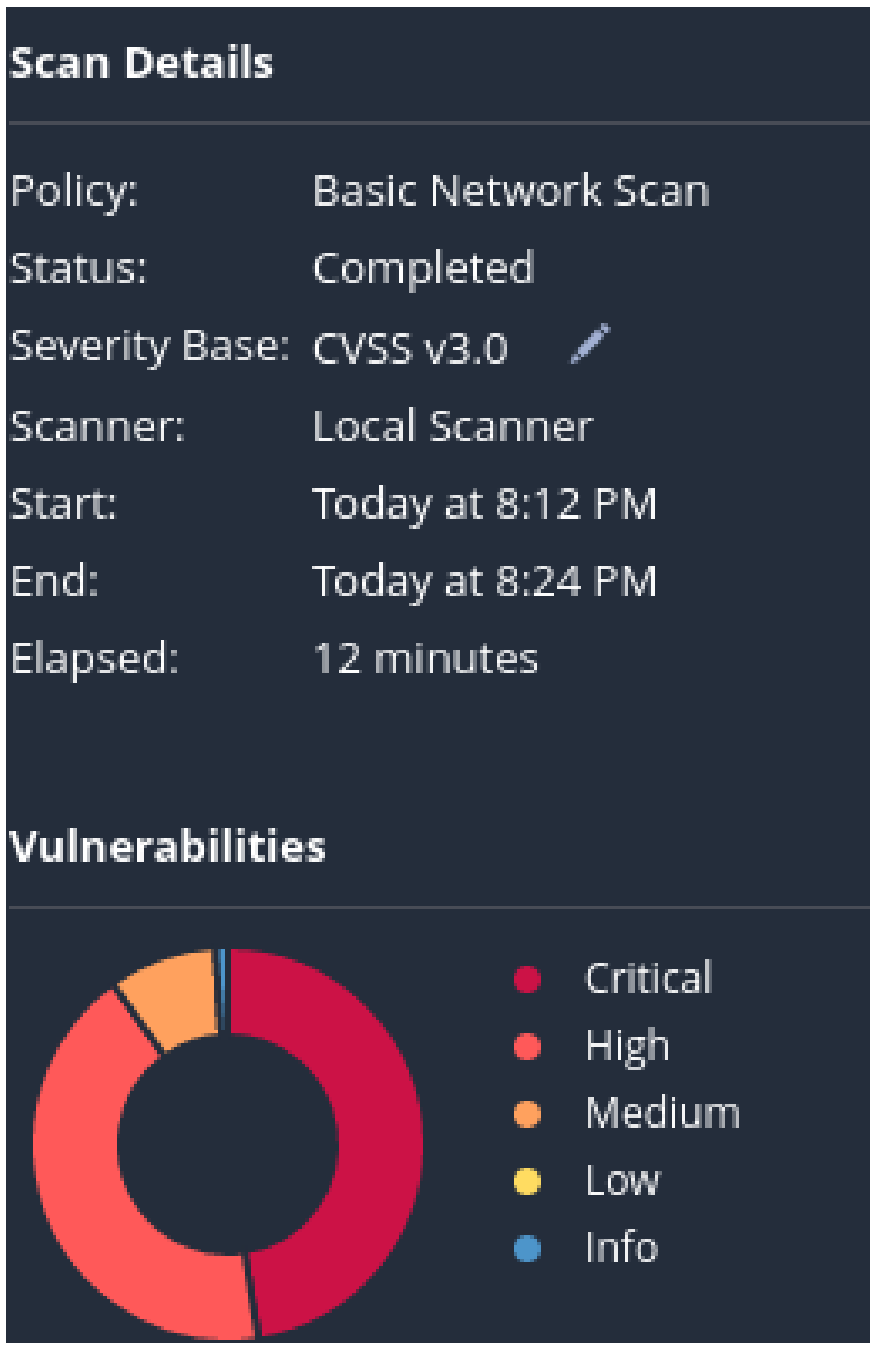


As we can see is really old

Now what we do is we just run our Nessus scan again!







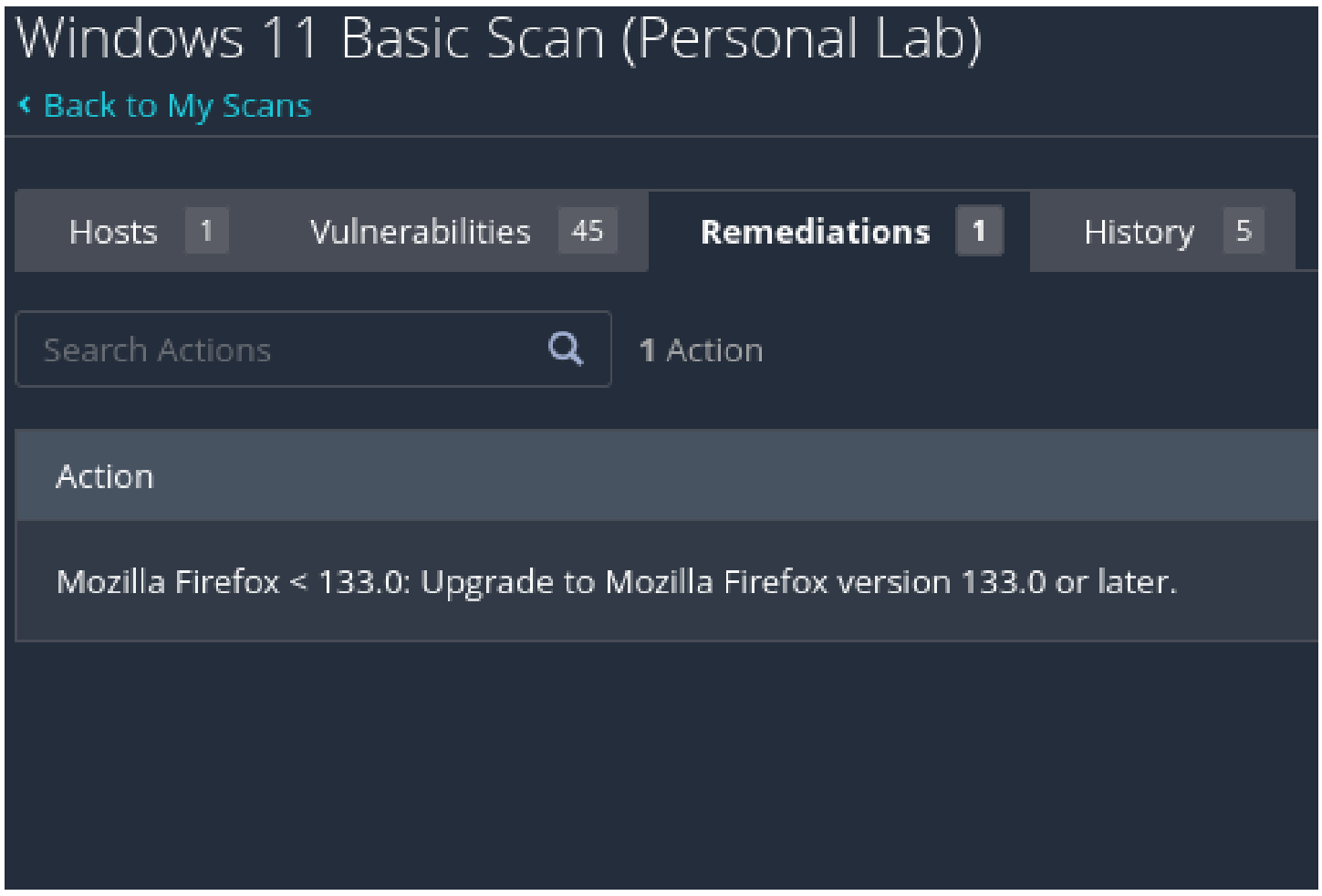
We found a lot of vulnerabilities related to Firefox!

Most of them are High to Critical

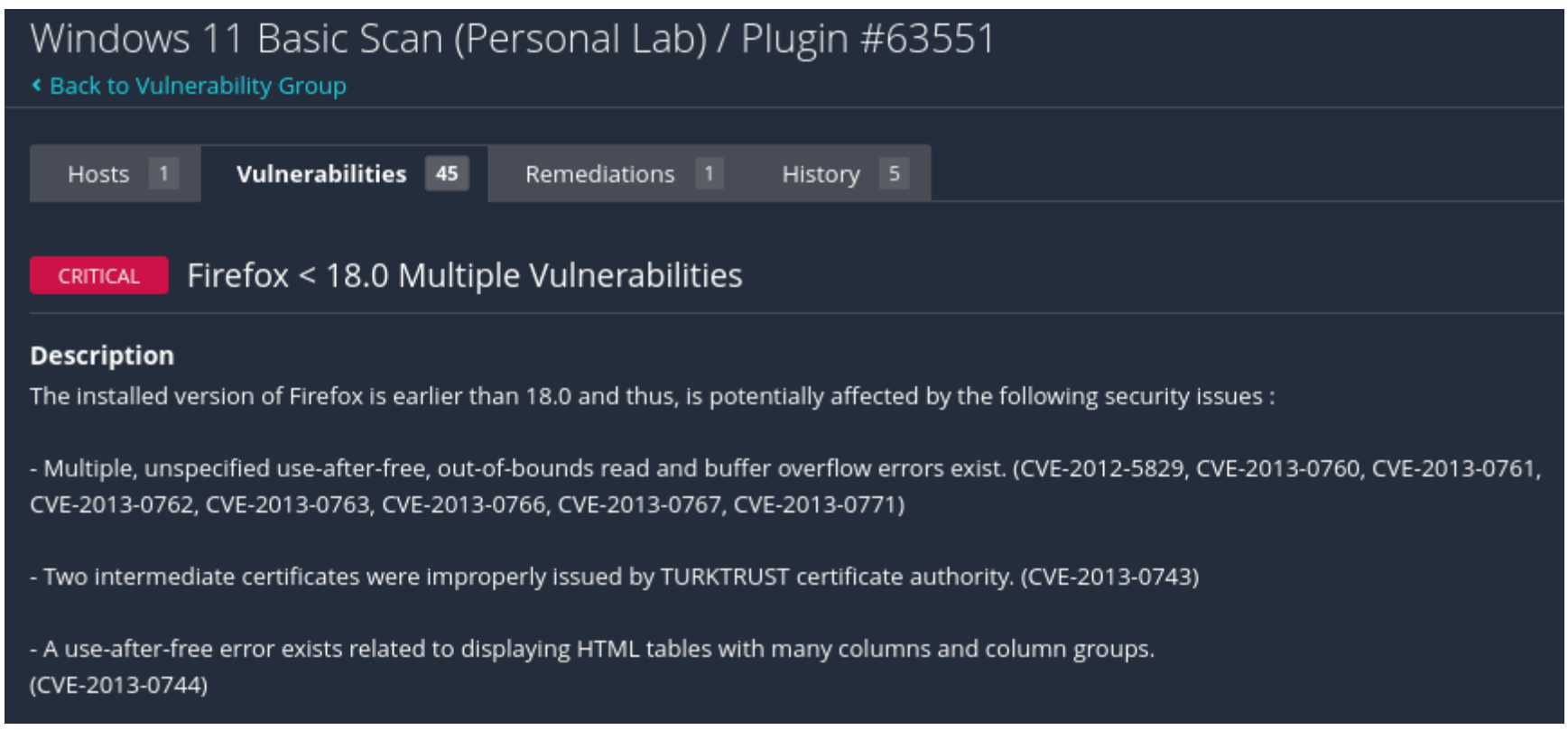
And we know the reason why Nessus has found a lot of vulnerabilities, is due to the fact that this Firefox is really old and there is a lot of known vulnerabilities about it.

The easiest way to fix it is of course upgrade the Firefox to the newest version, or just deleting it completely

If we go to remediations this is the only option that it gives us

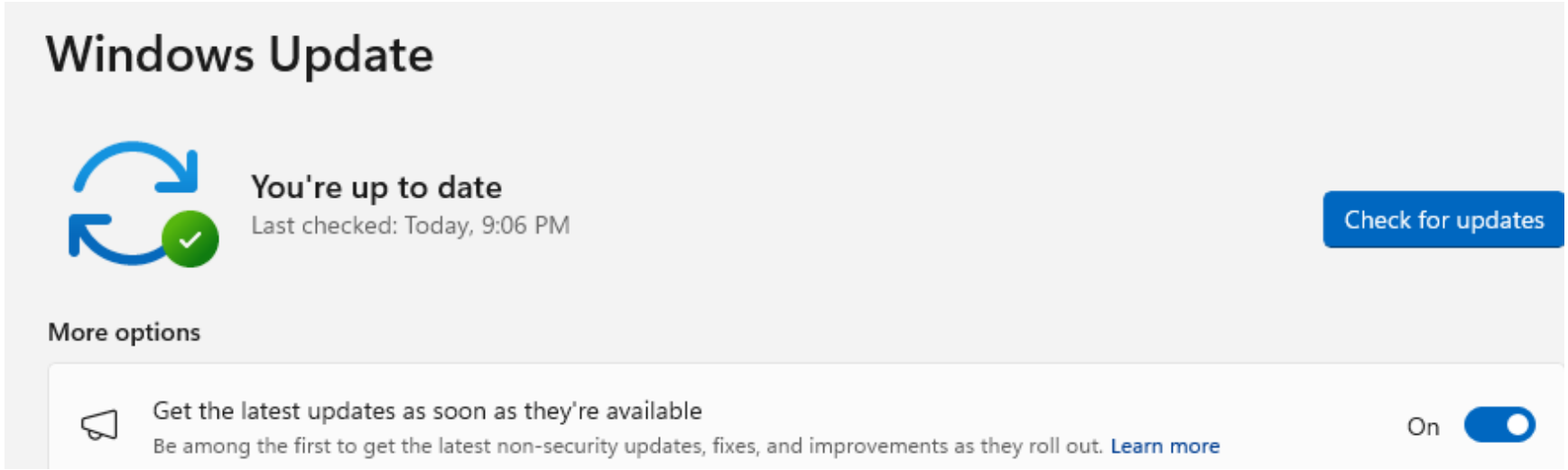


This is example of one of the critical vulnerabilities reported by Nessus about this old Firefox

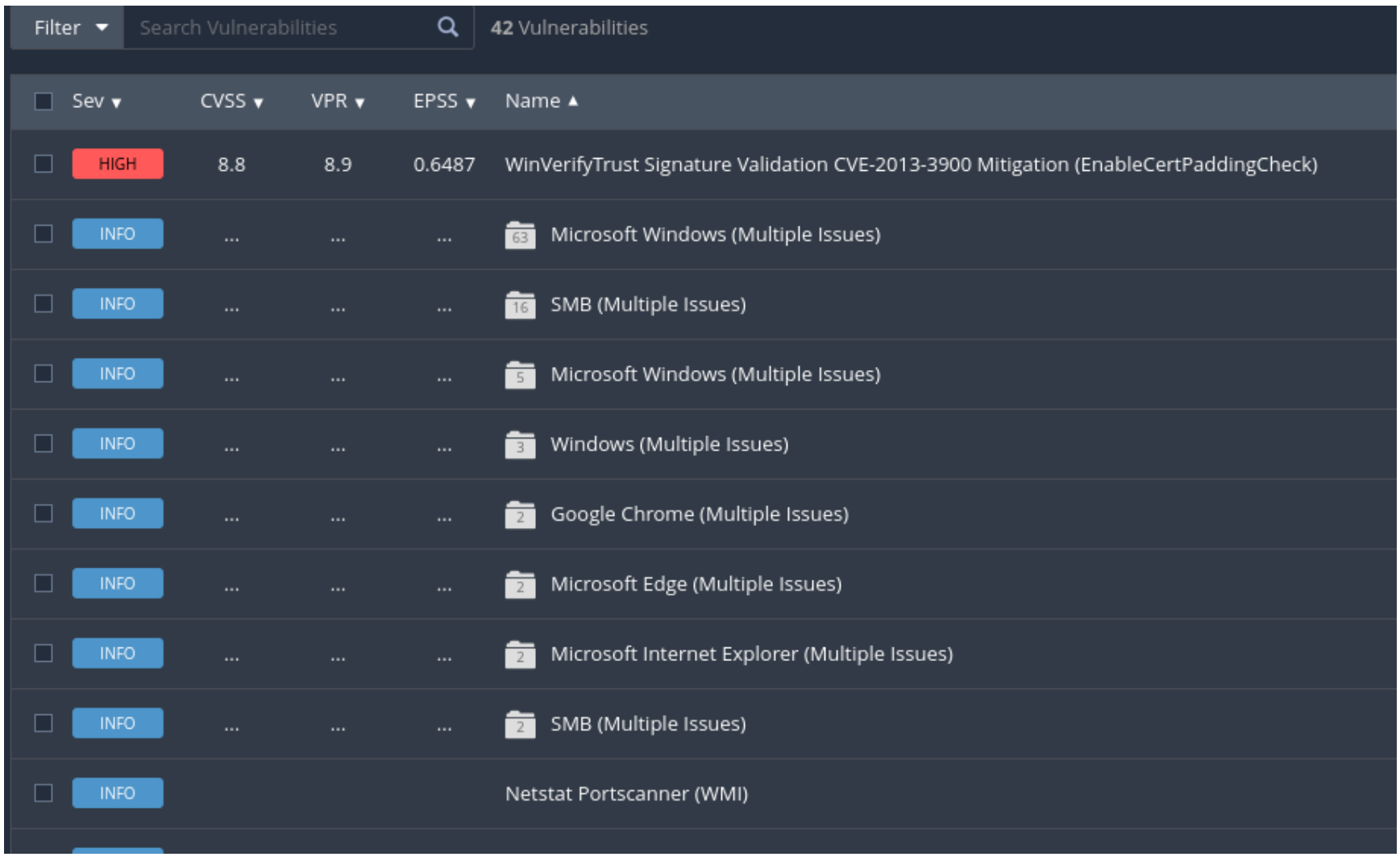


Now what I will do is I will try my best to remediate the vulnerabilities found by Nessus, and what I will do is simply is just delete Firefox and then I will see if there is any updates available for my Windows VM

Its updated!

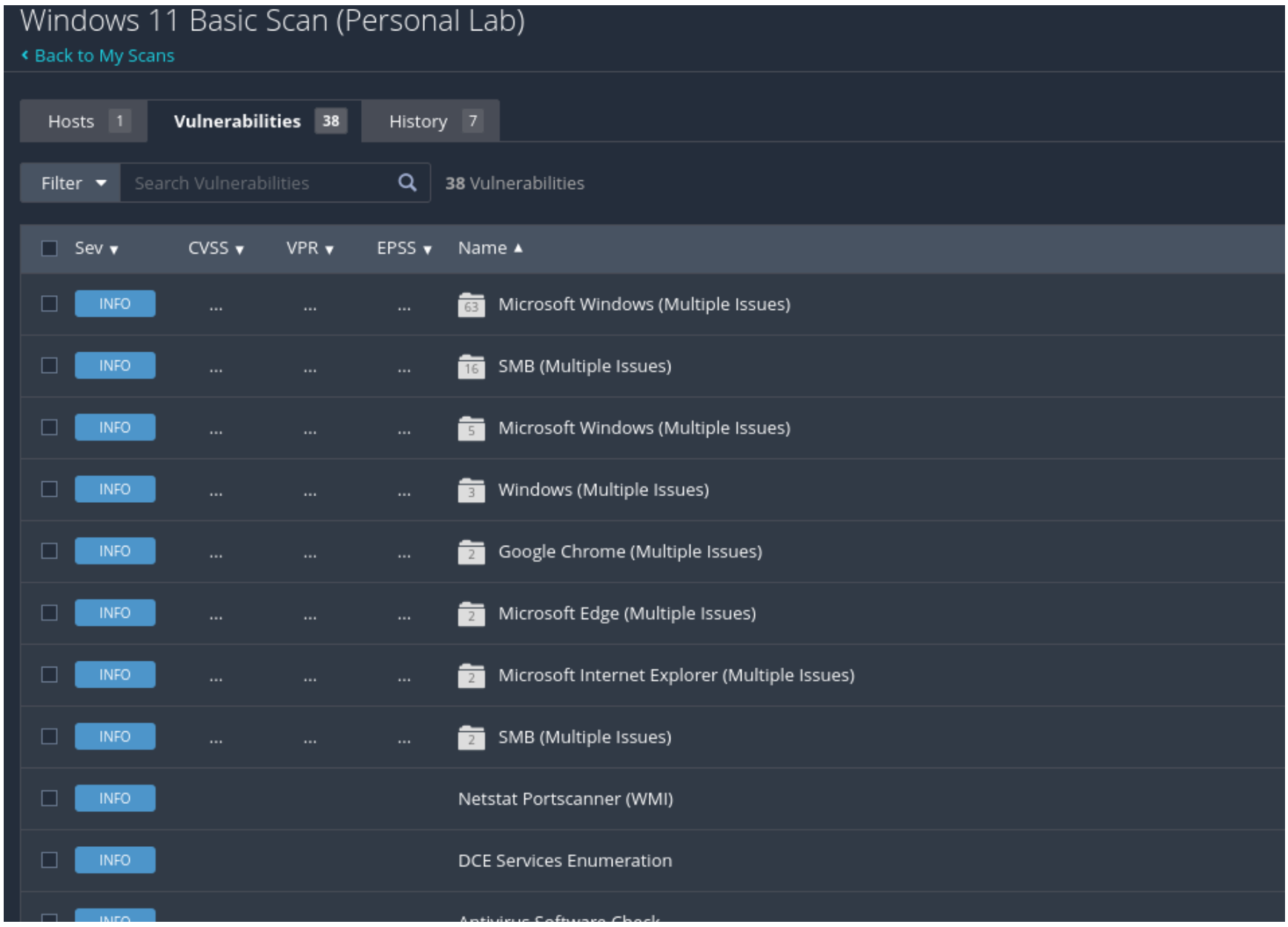


And this is the new scan!



It is the same as the previous scan that we added the credentials, but we far less vulnerabilities than when we downloaded the old Firefox

After that what I did is I fixed as well the "***WinVerifyTrust***" vulnerability



What I did was I used both of these commands in powerwhell:

```
REG ADD "HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Cryptography\Wintrust\Config" /v Enable
CertPaddingCheck /t REG_DWORD /d 1 /f
REG ADD "HKEY_LOCAL_MACHINE\Software\Wow6432Node\Microsoft\Cryptography\Wintrust\Confi
g" /v EnableCertPaddingCheck /t REG_DWORD /d 1 /f
```

These 2 Commands are basically the same, the only difference in them is that they add the "***EnableCertPaddingCheck***" in different directories. What is "***PaddingCheck***" and why do we enable it? "***PaddingCheck***" just refers to a validation mechanism that ensures the integrity of the digital certificates by verifying how extra data are handled in cryptographic Operations

As we can see, we have mitigated all known Vulnerabilities scanned by Nessus!

My Takeaways:

Nessus is a very strong vulnerability assessment tool, not only we have the GUI that provides a easy and seamless way to scan networks, but as well it is equipped will a lot of dedicated payloads for each scan type. Using this tool for future scans in CTF's for example will be really useful! I was able to get a lot of information that can be used to craft very dangerous payloads, or just having information that it shouldn't be disclosed to the public.

Will I replace Nessus with Nmap?

It really depends what kind of scan I want to do, although Nessus is really powerful and equipped with a lot of tools, some scans may take from Couple minutes to couple days, and as we know Nmap is really light compared to it, I believe that each tool is very useful in different scenarios