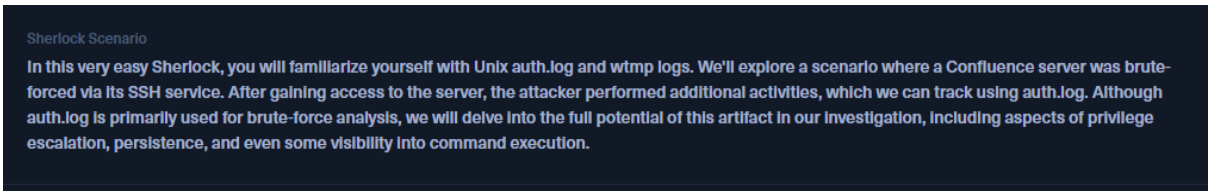
Hack the Box Brutus Writeup by Melisa Nyamukondiwa

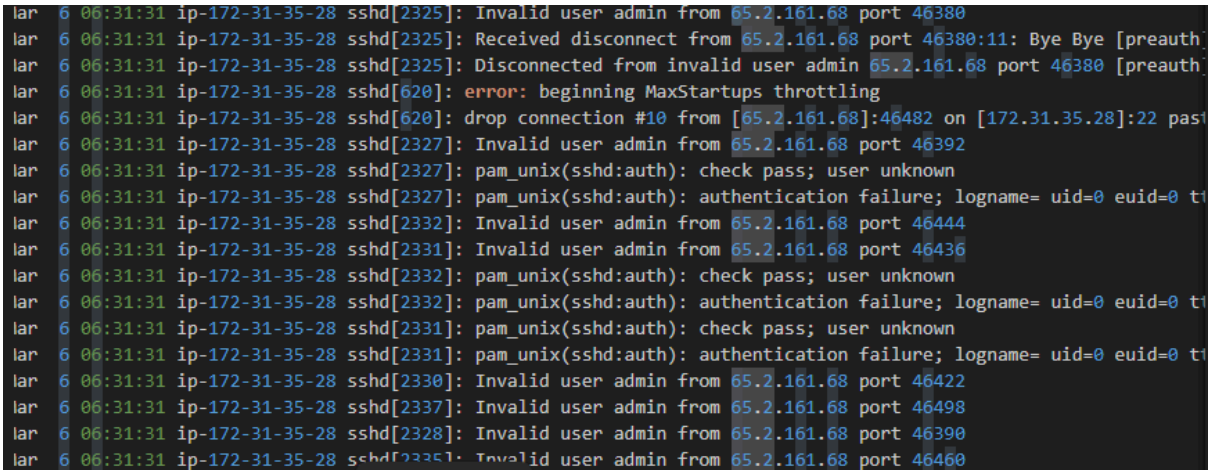
Scenario



Question 1

Analyze the auth.log. What is the IP address used by the attacker to carry out a brute force attack?

In order to answer this question, the auth.log file was analyzed. Upon scanning, it was revealed that the attacker had attempted to log in as admin multiple times but failed. These multiple failed attempts show that it was a brute force attack.



Question 2

The bruteforce attempts were successful and attacker gained access to an account on the server. What is the username of the account?

After brute forcing the attacker eventually gained access to the system. Log analysis showed the username of the account that the attacker gained access to was.

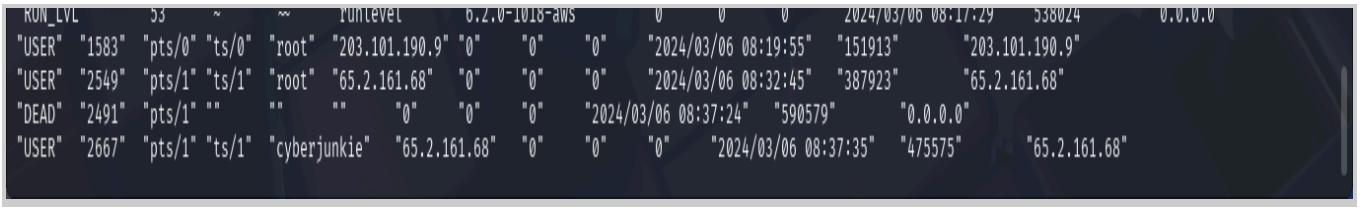
```
:44 ip-172-31-35-28 sshd[2491]: Accepted password for root from 65.2.161.68 port 53184 ssh2
:44 ip-172-31-35-28 sshd[2491]: pam_unix(sshd:session): session opened for user root(uid=0) by (uid=0)
:44 ip-172-31-35-28 systemd-logind[411]: New session 37 of user root.
```

Question 3

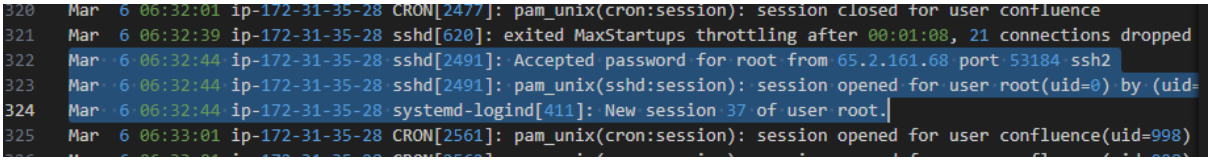
Identify the UTC timestamp when the attacker logged in manually to the server and established a terminal session to carry out their objectives. The login time will be different than the authentication time, and can be found in the wtmp artifact.

In order to view the contents of the artifact, the last command was utelized in the linux terminal. Unfortunately it was not possible to view the contents of this file. Therefore the tool provided in the Brutus was utilised. This tool is a python script that allows one to view the contents of a binary file.

Command used: `python3 utmp.py -o wtmp.out wtmp`
Output:



The wtmp artifact showed that there was a successful manual login on a specific date. A session was established but immediately closed. In order to confirm this: the auth.log file showed that there had been an authentication of a login a second before the session was established. The one second discrepancy can be explained by the fact that before authorisation can occur, authentication must happen; which is the purpose of the auth.log (to log successful authentication).



Question 4

SSH login sessions are tracked and assigned a session number upon login. What is the session number assigned to the attacker's session for the user account from Question 2?

Finding the session id for the successful root login of the attacker was simple because it shows in the auth.log above. When the login was authenticated, a session number was given for the user.

Question 5

The attacker added a new user as part of their persistence strategy on the server and gave this new user account higher privileges. What is the name of this account?

To find the name of the account, the auth logs were analyzed and they revealed the following:

```
Mar  6 06:34:18 ip-172-31-35-28 useradd[2592]: new user: name=cyberjunkie, UID=1002, GID=1002, home=/home/cyberj
Mar  6 06:34:26 ip-172-31-35-28 passwd[2603]: pam_unix(passwd:chauthtok): password changed for cyberjunkie
Mar  6 06:34:31 ip-172-31-35-28 chfn[2605]: changed user 'cyberjunkie' information
```

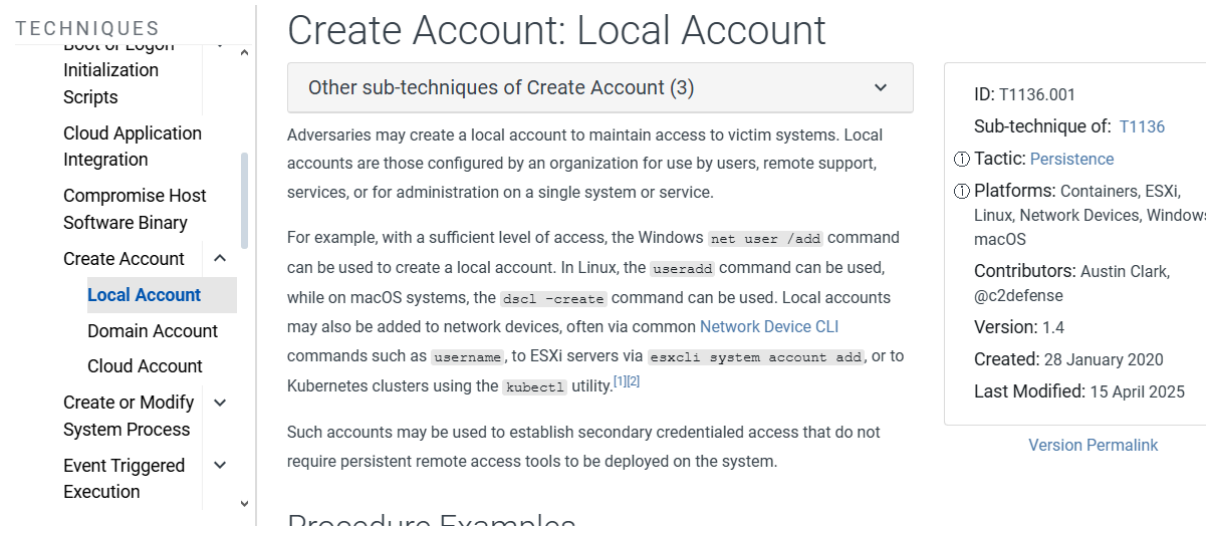
Afterward, this user was given higher privileges by being added to the sudo and shadow groups. This means this user can perform higher level activities on this system.

```
Mar  6 06:35:01 ip-172-31-35-28 CRON[2615]: pam_unix(cron:session): session closed for user confluence
Mar  6 06:35:15 ip-172-31-35-28 usermod[2628]: add 'cyberjunkie' to group 'sudo'
Mar  6 06:35:15 ip-172-31-35-28 usermod[2628]: add 'cyberjunkie' to shadow group 'sudo'
Mar  6 06:36:01 ip-172-31-35-28 CRON[2640]: pam_unix(cron:session): session opened for user confluence(uid=998)
```

Question 6

What is the MITRE ATT&CK sub-technique ID used for persistence by creating a new account?

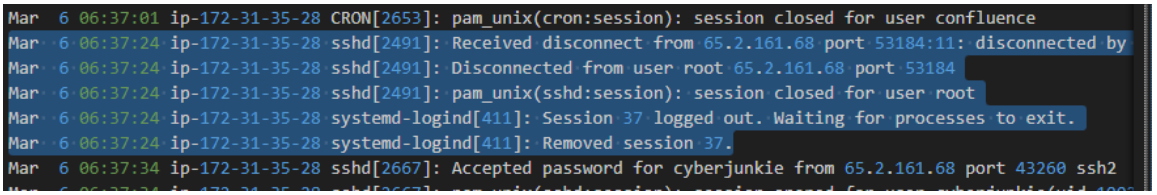
In order to find the subtechnique, the MITRE website was visited. Under enterprise techniques | Persistence and Create Account, the subtechnique was found. The framework's explanation fits how the attacker maintained persistence. They added a local account in Linux using useradd.



Question 7

What time did the attacker's first SSH session end according to auth.log?

The auth log shows the time the attackers first ssh session when the attacker logged in ended at:

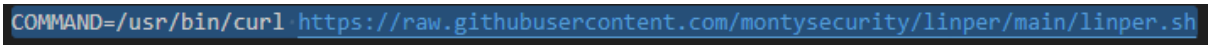


The attacker's first ssh session ended at this time and the log shows the process from when the attacker initiated a disconnect from ssh as root to the time the session was terminated.

Question 8

The attacker logged into their backdoor account and utilized their higher privileges to download a script. What is the full command executed using sudo?

Upon looking through the actions performed by the attacker after logging in with their backdoor account, it was noted that this was the command used to download a script. This information was found by looking through the actions the account created by the attacker performed.



Conclusion

This Sherlock box involved investigating the aftermath of an attack using an auth.log, a wtmp artifact and a utmp.py script. Using these materials it was possible to determine the ip address of the attacker, the time they successfully logged in, the actions they performed after logging in and how they maintained persistence.

Lessons Learned

- How to use authentication logs to determine successful and unsuccessful log in attempts
- How to utelize a python script to read a binary file and extract valuable information from it such as timestamps
- How to analyze an auth.log to find out what actions an attacker took in the system, any sessions established and closed.
- How to use various sources of information to determine the timeline of an attack and the actions taken.