

PAM – Pluggable Authentication Modules

LINUX SECURITY

Pluggable Authentication Modules (PAM)

- Provides a generic way for applications to implement support for authentication and authorization
- Application calls `libpam` functions to authenticate and authorize users
- `libpam` handles checks based on the application's PAM configuration file
- `/etc/pam.d` directory contains the PAM configuration files for each PAM- aware application.
- PAM modules are stored in `/lib/security` and each module implements some tests which may pass or fail

TASK ASSIGNED

1. Password complexity:

- The password includes at least one upper-case alphabet.
- The password includes at least two lower-case alphabet.
- The password includes at least one special character.
- The password includes at least one numeric character.
- Dictionary word not allowed.
- The minimum length of passwords – 8 characters.

2. Account lockout:

- 3 successive failures result in a user's account being locked for 30 minutes.
- 5 successive failures result in a user's account being locked permanently.**
(LEFT)

Hardware and software configurations on which we worked

- Processor – AMD A6-5350M APU with Radeon™ HD Graphics
- Memory – 994.9 MiB
- Disk – 9.4 GB
- OS – Ubuntu 12.04 LTS
- OS type – 64 bit

- Ubuntu uses four configuration files – one for each of the four module types:
- `/etc/pam.d/common-auth`
- `/etc/pam.d/common-account`
- `/etc/pam.d/common-password`
- `/etc/pam.d/common-session`

Changes in /etc/pam.d/common-password file

(pam_cracklib.so module should be installed in the pam-package of your system in order to set the password complexity.)

```
password      requisite      pam_cracklib.so  retry=3  
minlen=8      ucredit=-1    lcredit=-2 dcredit=-1    ocredit=-  
1
```

```
password [success=1 default=ignore] pam_unix.so  
obscure  use_authok try_first_pass sha512
```

```
password requisitepam_deny.so
```

```
password requiredpam_permit.so
```

```
] - Oracle VM VirtualBox
ananya-VirtualBox: ~
ananya@ananya-VirtualBox:~$ sudo passwd
[sudo] password for ananya:
New password:
BAD PASSWORD: it is too short
BAD PASSWORD: is too simple
Retype new password:
Sorry, passwords do not match.
New password:
BAD PASSWORD: is too simple
Retype new password:
Sorry, passwords do not match.
New password:
BAD PASSWORD: it does not contain enough DIFFERENT characters
BAD PASSWORD: is too simple
Retype new password:
Sorry, passwords do not match.
passwd: Have exhausted maximum number of retries for service
passwd: password unchanged
ananya@ananya-VirtualBox:~$ sudo passwd
New password:
BAD PASSWORD: is too simple
Retype new password:
Sorry, passwords do not match.
New password:
BAD PASSWORD: it is based on a dictionary word
Retype new password:
Sorry, passwords do not match.
New password:
Retype new password:
passwd: password updated successfully
ananya@ananya-VirtualBox:~$
```

If you encounter an error like below after the changes in `/etc/pam.d/common-password` file and try to run `passwd` command:

`passwd: module is unknown`

`passwd: password unchanged`

It refers to that the `pam_cracklib.so` module is not installed in your machine and you need to install it first.

Changes in /etc/pam.d/common-auth and /etc/pam.d/account files

/etc/pam.d/common-auth:

auth requisite pam_tally2.so file=var/log/tallylog onerr=fail even_deny_root deny=3 unlock_time=1800

auth [success=1 default=ignore] pam_unix.so nullok_secure

auth requisite pam_deny.so

auth required pam_permit.so

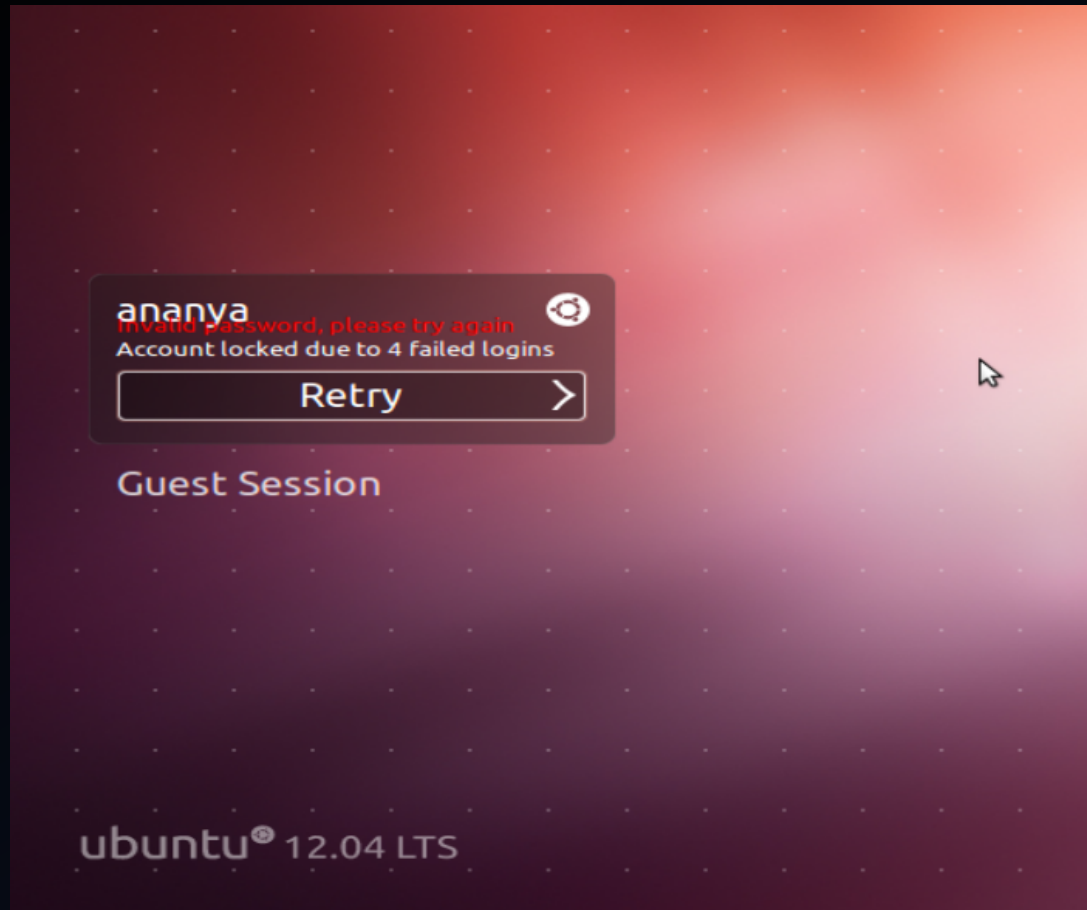
/etc/pam.d/common-account:

account required pam_tally2.so

account [success=1 new_authtok_reqd=done default=ignore] pam_unix.so

account requisite pam_deny.so

account required pam_permit.so



```
] - Oracle VM VirtualBox
it
ananya@ananya-VirtualBox: ~
ananya@ananya-VirtualBox:~$ sudo login
[sudo] password for ananya:
ananya-VirtualBox login: ananya
Password:

Login incorrect
ananya-VirtualBox login: ananya
Password:

Login incorrect
ananya-VirtualBox login: ananya
Password:

Login incorrect
ananya-VirtualBox login: ananya
Account locked due to 4 failed logins

Login incorrect
ananya-VirtualBox login: █
```

References

- <http://xmodulo.com/set-password-policy-linux.html>
- www.itworld.com/article/2726217/endpoint-protection/how-to-enforce-password-complexity-on-linux.html
- man7.org/linux/man-pages/man5/login.defs.5.html
- https://access.redhat.com/documentation/en-US/Red_Hat_Enterprise_Linux/6/html/Managing_Smart_Cards/PAM_Configuration_Files.html
- <http://unix.stackexchange.com/questions/78182/how-to-lock-users-after-5-unsuccessful-login-tries>
- <https://www.digitalocean.com/community/tutorials/how-to-use-pam-to-configure-authentication-on-an-ubuntu-12-04-vps>