Full PAM installation using Docker Compose

Introduction

This tutorial will describes **all the steps required to install and configure a basic PAM environment** for a local, demo or small production environment.

Prerequisites

- We have a **Linux** machine; Ubuntu 24 has been used for this tutorial.
- **Docker** and the **Docker Compose** plugin are already installed.
- The **database**, **Console** and **Syncserver** have already been installed.
- The Linux administrator user has **sudo privileges**.

Step 1: Prepare certificates

1.1 Introduction

> This tutorial will use **self-signed certificates** generated for a lab environment.

> If you have your **own certificates**, follow the steps depending on the file type.

> For this tutorial, we will be using the following hostnames: **store.soffid4.local** and **launcher.soffid4.local**

Go to the current Soffid 4 **directory** where the docker-compose.yaml is located.

```
cd /home/user/lab/soffid4/
```

Add the hostnames in your **hosts** file.

```
sudo vim /etc/hosts
```

```
127.0.0.1 store.soffid4.local
127.0.0.1 launcher.soffid4.local
```

1.2 Generate .key files

> When you run the command, you will be prompted for a **password**. In this tutorial, we will always use the value **12345678**; please replace this with the password of your choice (minimum 8 characters)

```
sudo openssl genrsa -aes256 -out store.soffid4.local.key
sudo openssl genrsa -aes256 -out launcher.soffid4.local.key
```

1.3 Generate .pem files

> When you run the command, the prompt will ask for the **CN (Common Name)** attribute; use the values from our domains: **store.soffid4.local** or **launcher.soffid4.local**

```
sudo openssl req -x509 -days 1000 -new -key store.soffid4.local.key -out store.soffid4.local.pem
sudo openssl req -x509 -days 1000 -new -key launcher.soffid4.local.key -out launcher.soffid4.local.pem
```

1.3 Generate .pfx files

```
sudo openssl pkcs12 -export -in store.soffid4.local.pem -inkey store.soffid4.local.key -out store.soffid4.local.pfx
sudo openssl pkcs12 -export -in launcher.soffid4.local.pem -inkey launcher.soffid4.local.key -out
launcher.soffid4.local.pfx
```

1.4 Generate .jks files

```
sudo keytool -v -importkeystore -srckeystore store.soffid4.local.pfx -srcstoretype PKCS12 -destkeystore
store.soffid4.local.jks -deststoretype JKS -destkeypass 12345678 -srcstorepass 12345678 -deststorepass
12345678
sudo keytool -v -importkeystore -srckeystore launcher.soffid4.local.pfx -srcstoretype PKCS12 -destkeystore
```

```
launcher.soffid4.local.jks -deststoretype JKS -destkeypass 12345678 -srcstorepass 12345678 -deststorepass 12345678
```

Step 2: Store configuration

2.1 Add the store in the yaml file

Edit your docker-compose.yaml.

```
sudo vim docker-compose.yaml
```

Add the store service in your docker-compose.yaml.

> For this tutorial, **ports 8090** and **8091** have been opened.

```
services:
  store:
    image: soffid/pam-store:1.4.88
    environment:
      JAVA_KEYSTORE: /opt/soffid/tomee/certificates/store.soffid4.local.jks
      KEYSTORE_PASS: 12345678
    ports:
      - "8090:8080"
      - "8091:8443"
    networks:
      - network
    volumes:
      - store-trustedcerts:/opt/soffid/tomee/trustedcerts
      - store-certificates:/opt/soffid/tomee/certificates
      - store-data:/opt/soffid/tomee/data

volumes:
  store-trustedcerts:
    name: soffid4-pam-store-trustedcerts
  store-certificates:
    name: soffid4-pam-store-certificates
  store-data:
    name: soffid4-pam-store-data
```

Regenerate the docker containers.

```
sudo docker compose up -d
```

2.2 Create users

> The **console** and the **launcher** will need **users** to **connect** to the **store**.

> We have to **run** a **script** in the **store** container to **create the user**. This script has two parameters, the user name, and the role. The role opcions are "console" or "launcher".

Create the **user-console**.

```
docker compose exec store /opt/soffid/tomee/bin/add-user.sh user-console console
```

> When the user is created, its **password** is **generated** and displayed in the script's output; please **copy and save it** for use in the next steps.

```
/bin/bash: warning: setlocale: LC_ALL: cannot change locale (en_US.UTF-8)
Password: cccccc/Qul9NFIqQnDU73gYccccVHThyew7Qt8Hqpf0rEzVq1Ft7azccccccc
```

Create the **user-launcher**.

```
docker compose exec store /opt/soffid/tomee/bin/add-user.sh user-launcher launcher
```

```
/bin/bash: warning: setlocale: LC_ALL: cannot change locale (en_US.UTF-8)
Password: asdadadasdads/Qul9NFIqQnDU73gYccccVHThyew7Qt8Hqpf0rEzVq1Ft7aadadadadasd
```

2.3 Add the certificate

Copy the **jks certificate** into the container.

```
docker compose cp store.soffid4.local.jks store:/opt/soffid/tomee/certificates
```

Restart the store.

```
docker compose restart store
```

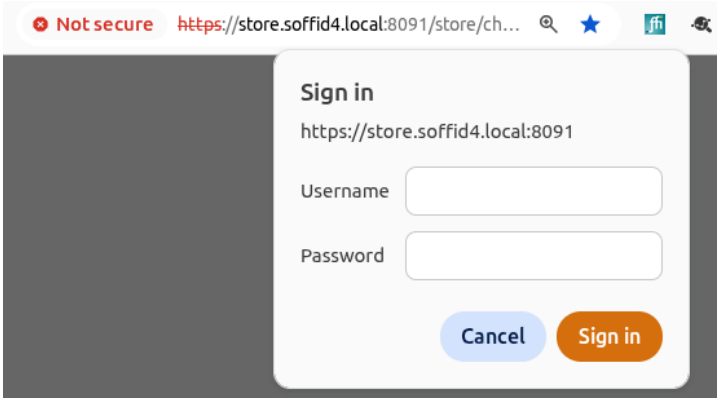
2.4 Monitoring the store

>

> If the store has started successfully, we will be able to access the store's**monitoring** page.

https://store.soffid4.local:8091/store/check

> You must use the **user-console** username to log in.



This is result.

If something has gone wrong, you need to check the log.

```
sudo docker compose logs store
```

Step 3: Launcher configuration

3.1 Add the launcher in the yaml file

Edit your docker-compose.yaml.

```
sudo vim docker-compose.yaml
```

Add the launcher service in your docker-compose.yaml.

> For this tutorial, **ports 8092** and **8093** have been opened.

```
services:
  launcher:
    image: soffid/pam-launcher:1.4.88
    environment:
      JAVA_KEYSTORE: /opt/soffid/tomee/certificates/launcher.soffid4.local.jks
      KEYSTORE_PASS: 12345678
      STORE_SERVER: http://store:8080
      STORE_USER: user-launcher
      STORE_PASSWORD: asdadadasdads/Qul9NFIqQnDU73gYccccVHThyew7Qt8Hqpf0rEzVq1Ft7aadadadasd
    ports:
      - "8092:8080"
      - "8093:8443"
    networks:
      - network
    volumes:
      - launcher-trustedcerts:/opt/soffid/tomee/trustedcerts
      - launcher-certificates:/opt/soffid/tomee/certificates
      - launcher-data:/opt/soffid/tomee/launcher
      - /var/run/docker.sock:/var/run/docker.sock

volumes:
  launcher-trustedcerts:
    name: soffid4-pam-launcher-trustedcerts
  launcher-certificates:
    name: soffid4-pam-launcher-certificates
  launcher-data:
    name: soffid4-pam-launcher-data
```

Regenerate the docker containers.

```
sudo docker compose up -d
```

3.2 Add the certificate

Copy the **jks certificate** into the container.

```
docker compose cp launcher.soffid4.local.jks launcher:/opt/soffid/tomee/certificates
```

Restart the launcher.

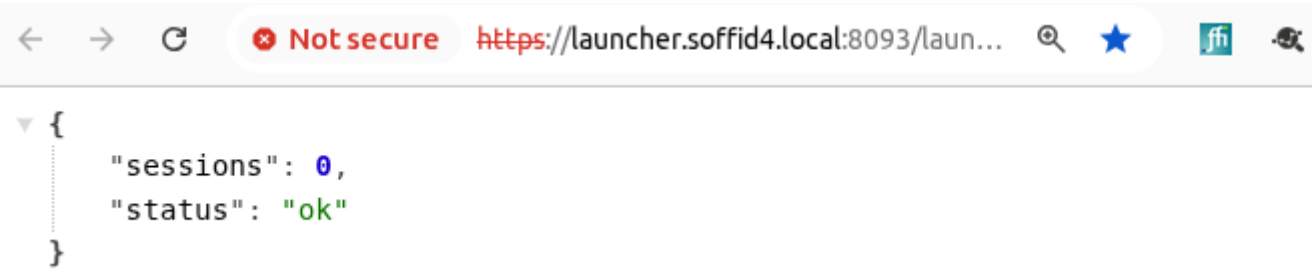
```
docker compose restart launcher
```

3.3 Monitoring the launcher

> If the launcher has started successfully, we will be able to access the store's **monitoring** page.

https://launcher.soffid4.local:8093/launch/status

This is result.



If something has gone wrong, you need to check the log.

```
sudo docker compose logs launcher
```

Step 4: Register certificates

4.1 In the Console

Add the PAM hostnames in the console service.

> Check the **IP** of the **docker environtment**, in this tutorial 192.168.122.1.

```
sudo vim docker-compose.yaml


    extra_hosts:
      - store.soffid4.local:192.168.122.1
      - launcher.soffid4.local:192.168.122.1


docker compose up -d
```

Created the PAM certificates for the Console.

```
docker compose exec -it console bash
cd /opt/soffid/iam-console-4/trustedcerts
openssl s_client -connect store.soffid4.local:8091 < /dev/null | sed -ne '/-BEGIN CERTIFICATE-/,/-END
CERTIFICATE-/p' > store.soffid4.local.crt
openssl s_client -connect launcher.soffid4.local:8093 < /dev/null | sed -ne '/-BEGIN CERTIFICATE-/,/-END
CERTIFICATE-/p' > launcher.soffid4.local.crt
exit
docker compose restart console
```

4.2 Add a store certificate to the sync server

Add the PAM hostnames in the syncserver service.

```
sudo vim docker-compose.yaml


    extra_hosts:
      - store.soffid4.local:192.168.122.1


docker compose up -d
```

Add a store certificate to the sync server

```
docker compose exec -it syncserver bash
cd /opt/soffid/iam-sync/conf
openssl s_client -connect store.soffid4.local:8091 < /dev/null | sed -ne '/-BEGIN CERTIFICATE-/,/-END
CERTIFICATE-/p' > store.soffid4.local.crt
keytool -import -file store.soffid4.local.crt -keystore cacerts -alias store.soffid4.local
password: changeit
exit
docker compose restart syncserver
```

4.3 Add the store/syncserver certificate to the launcher

Add hostnames in the launcher service.

```
sudo vim docker-compose.yaml


    extra_hosts:
      - store.soffid4.local:192.168.122.1


docker compose up -d
```

Add the store/syncserver certificate to the launcher.

```
docker compose exec -it launcher bash
cd /opt/soffid/tomee/trustedcerts
openssl s_client -connect store.soffid4.local:8091 < /dev/null | sed -ne '/-BEGIN CERTIFICATE-/,/-END
CERTIFICATE-/p' > store.soffid4.local.crt
openssl s_client -connect sync-server-version4.network:1768 < /dev/null | sed -ne '/-BEGIN CERTIFICATE-/,/-END
CERTIFICATE-/p' > sync-server-version4.network.crt
exit
docker compose restart launcher
```

Step 5: Session types

5.1 Introduction

> When starting a user session through the launcher, it requires images for each **session type**; you must **load** the **latest** docker **image** so that the launcher can start the session.

5.2 load images

Download only the session types that you need.

```
sudo docker pull soffid/soffid-pasr-ssh:latest
sudo docker pull soffid/soffid-pasr-rdp:latest
sudo docker pull soffid/soffid-pasr-http:latest
sudo docker pull soffid/soffid-pasr-https:latest
sudo docker pull soffid/soffid-pasr-jdbc:latest
sudo docker pull soffid/soffid-pasr-tn5250:latest
sudo docker pull soffid/soffid-pasr-kube:latest
sudo docker pull soffid/soffid-pasr-google-chrome:latest
sudo docker pull soffid/soffid-pasr-vnc:latest
sudo docker pull soffid/soffid-pasr-iaccess:latest
sudo docker pull soffid/soffid-pasr-sap:latest
sudo docker pull soffid/soffid-pasr-gke:latest
```

5.3 Save web sessions

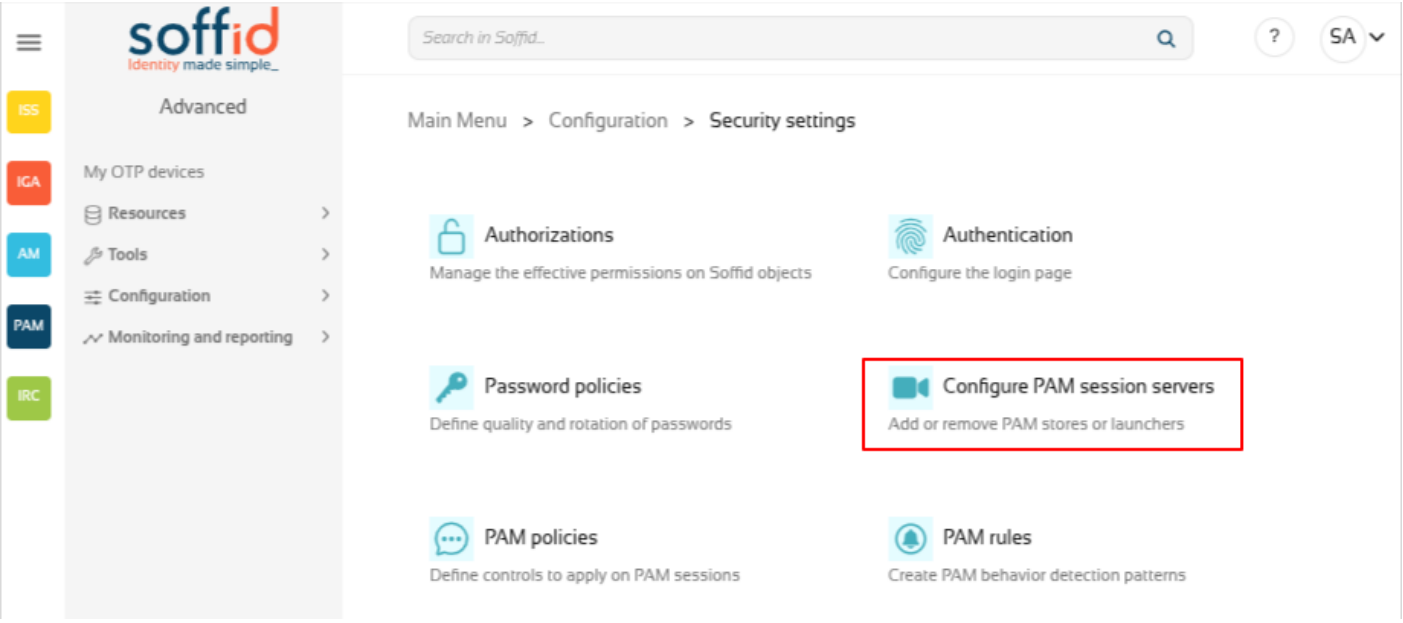
To **save a web sessions** you will need to add some parameters to the launcher **system.properties**.

```
docker compose exec -it launcher bash
cd /opt/soffid/tomee/conf/
apt-get update
apt-get install vim
vim system.properties

   SOFFID_PAM_PARAMS_http=--shm-size=1024m  --privileged -eVNCSERVER=yes
   SOFFID_PAM_PARAMS_https=--shm-size=1024m  --privileged -eVNCSERVER=yes

exit
docker compose restart launcher
```

Step 6: Configure PAM in Console

6.1 Introduction

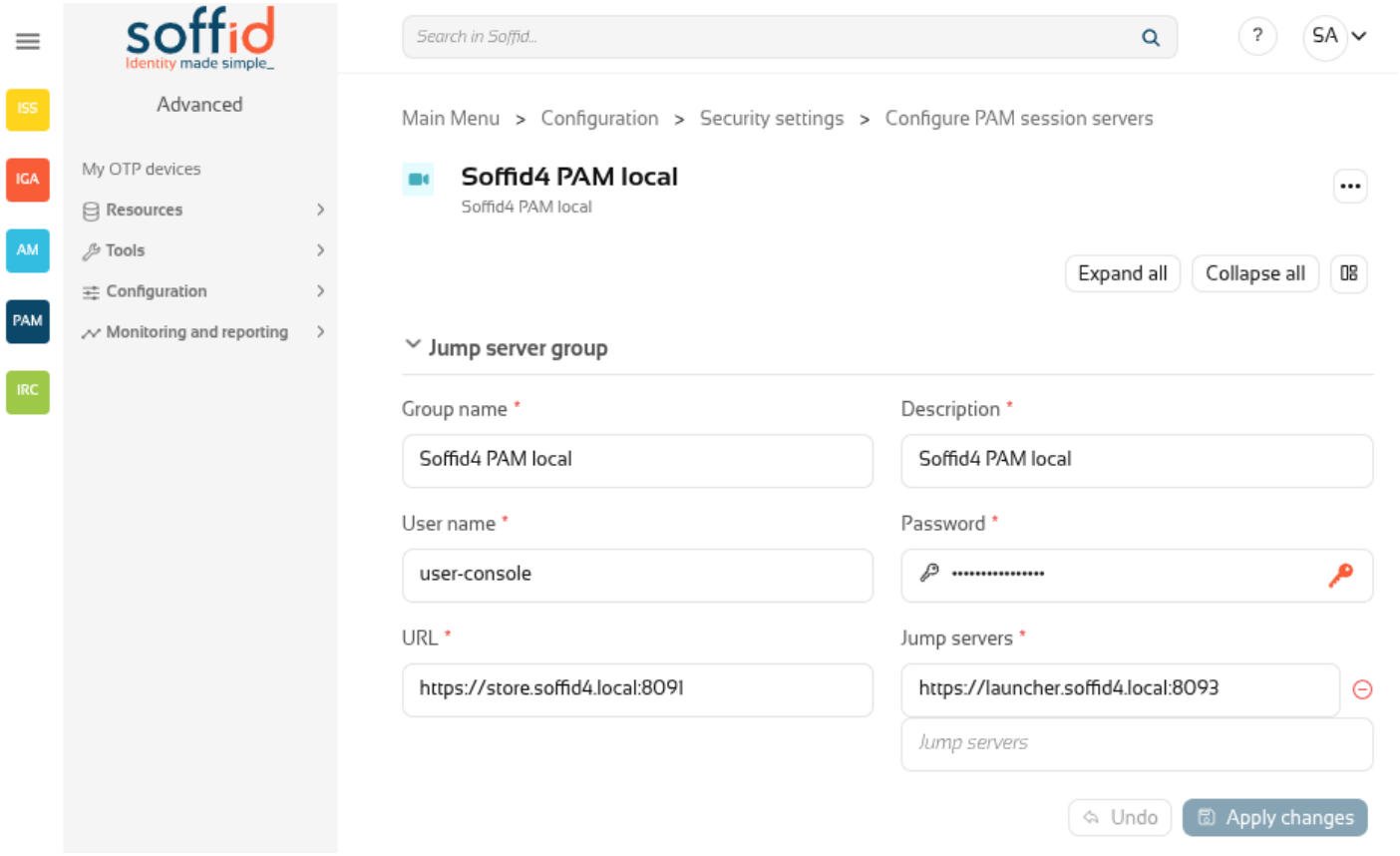
We can now go to the **Configure PAM session servers** page.



6.2 Create the PAM group

Create a new group and you register the **store** with its **user** and **password**, along with the **launcher**.

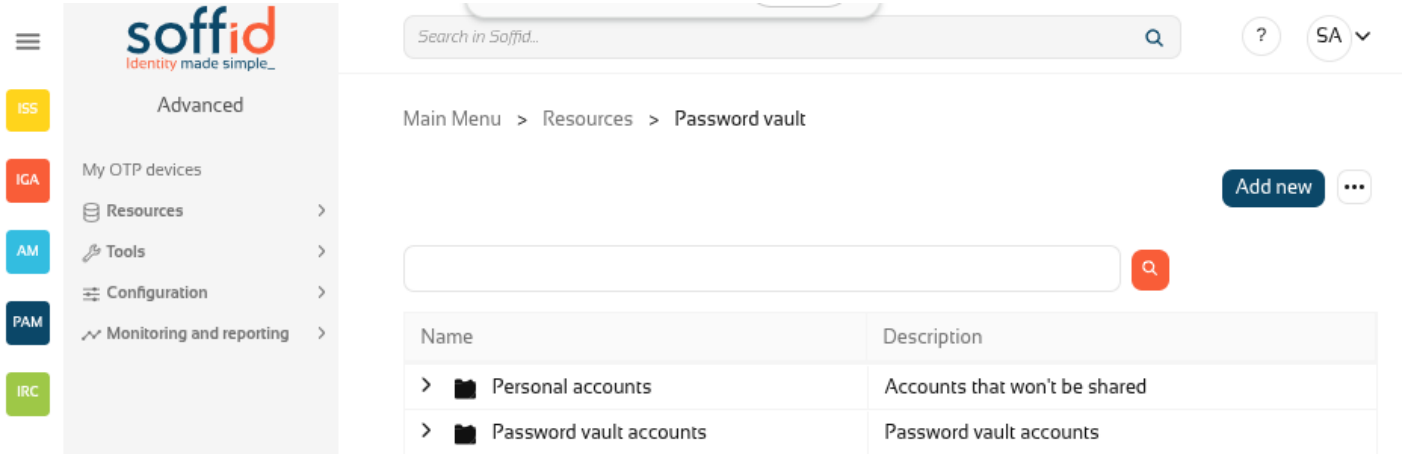
> If everything goes well, it will let you to save the changes!



Step 7: Open a web session

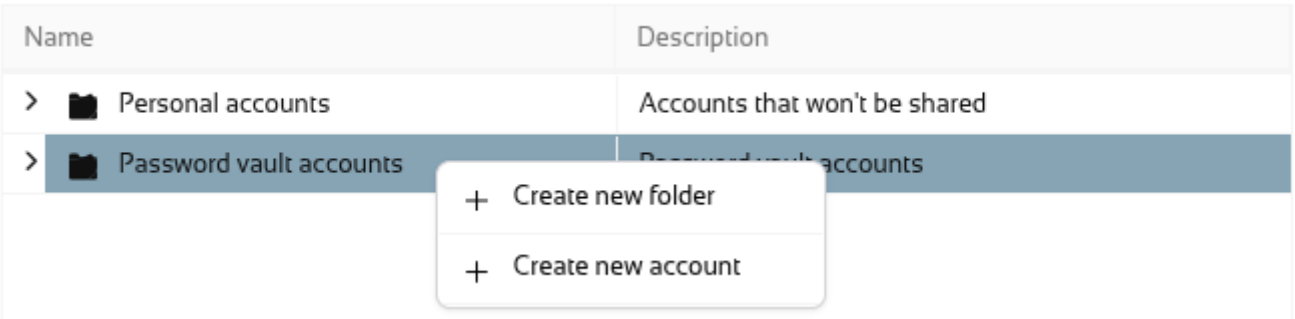
7.1 Password vault

Go to **Password vault** page.

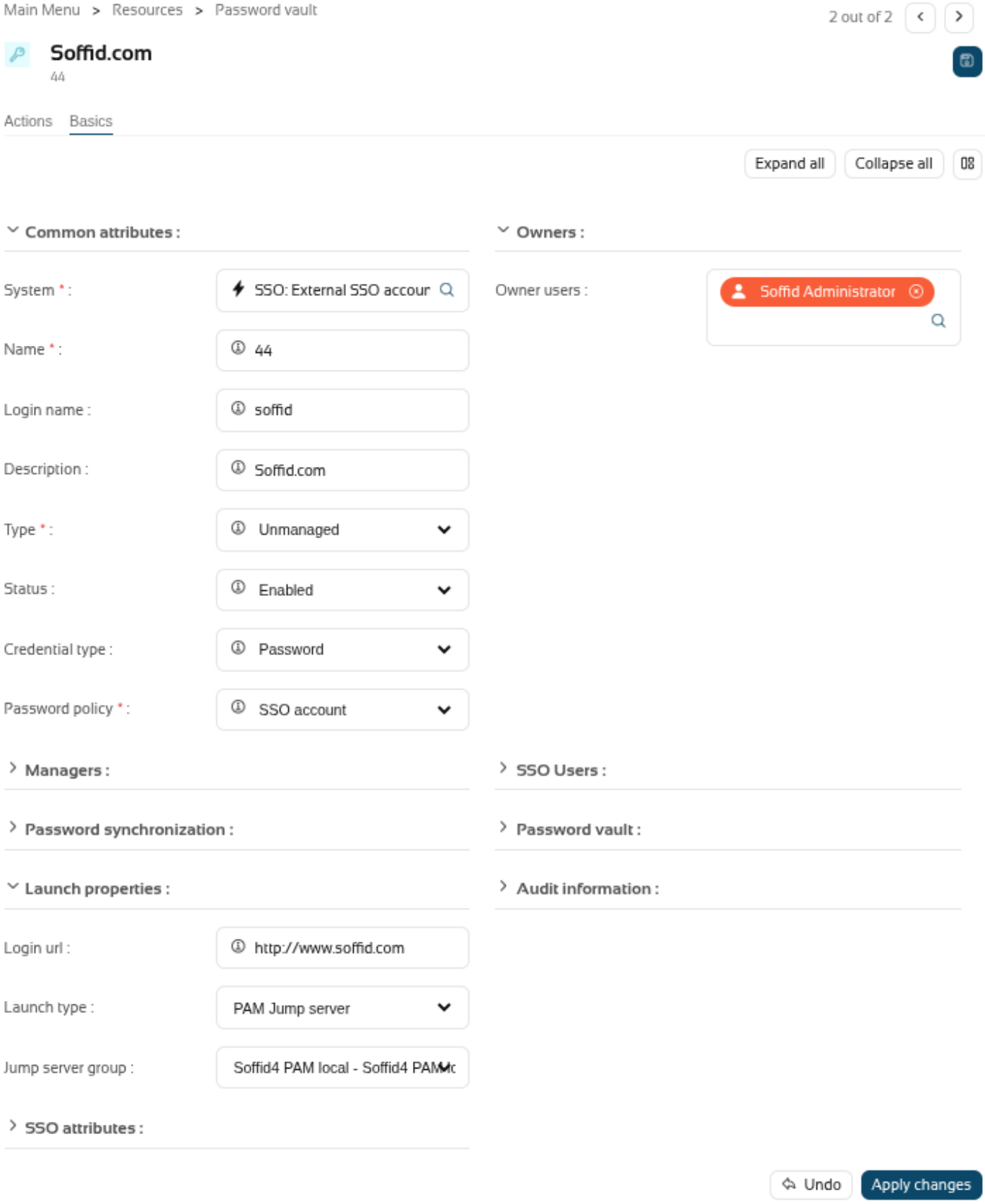


7.2 Create an account

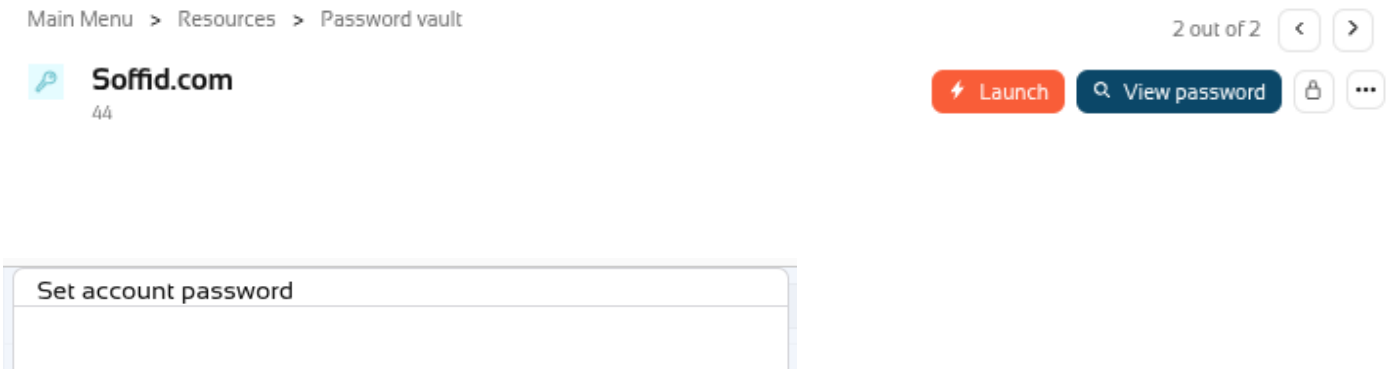
Password vault accounts > Create new account

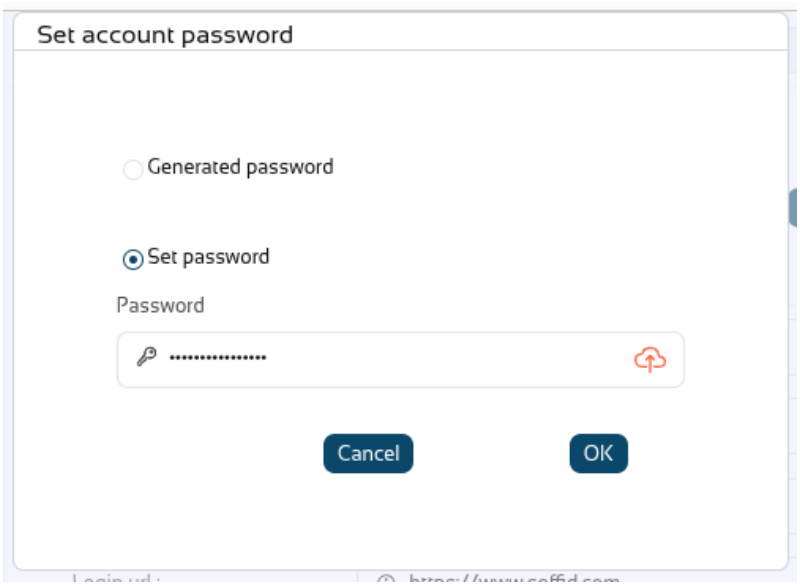


Add these values and click the dick button.



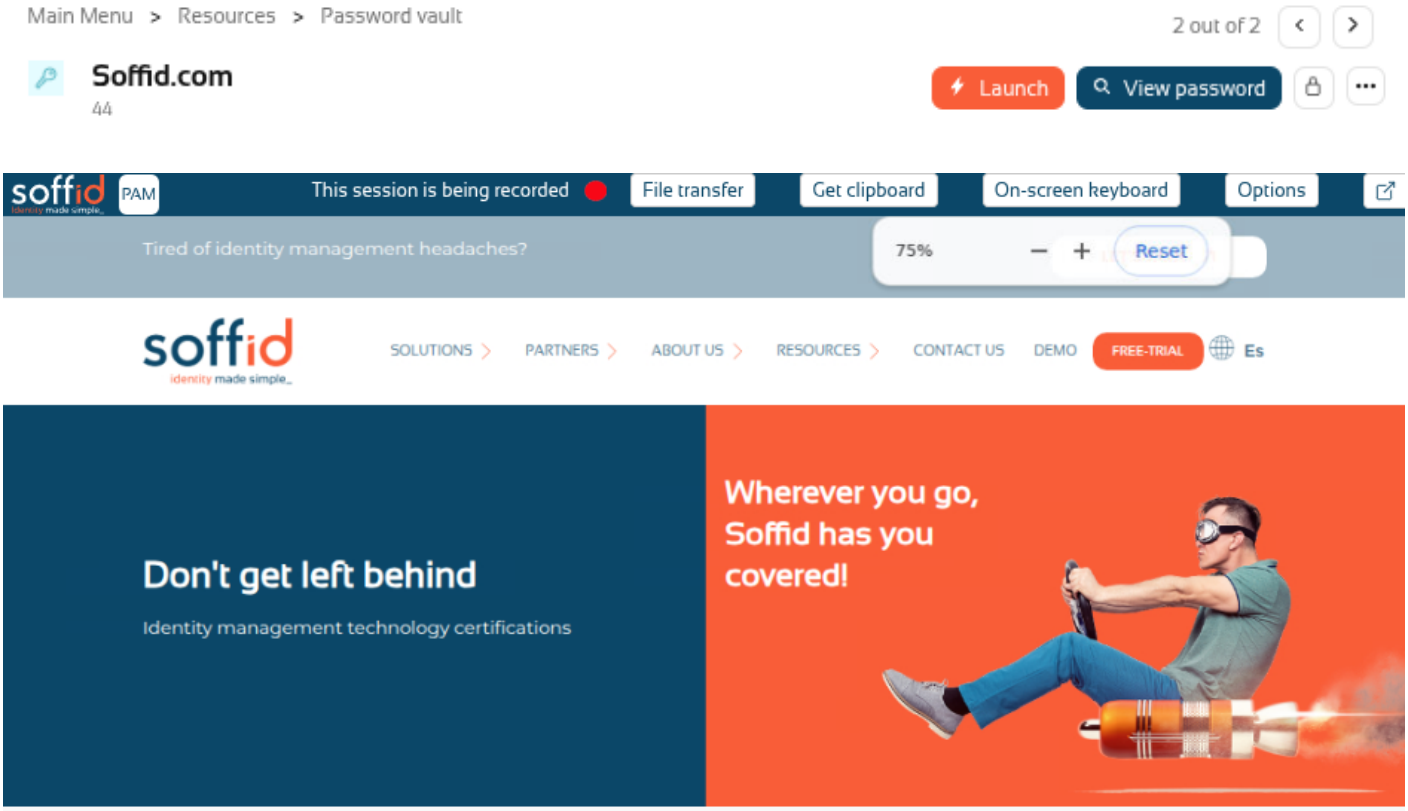
Save a dummy password.





7.3 Launch

Click the Launch button to confirm that the launcher can open the session type correctly.



> Now you have the PAM environment ready to continu

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