SSO (Single Sign On) demo project guide

Red Hat installation

Create HyperV virtual machine and set ISO image (before download RedHat ISO image from RedHat site

- Download RHEL ISO:
  - Register for the Red Hat Developer Program to download the RHEL ISO for free (for development and testing purposes).
  - https://developers.redhat.com/products/rhel/download
- Create a New Virtual Machine in Hyper-V:
  - Open Hyper-V Manager.
  - Click New > Virtual Machine and follow the wizard to create a new VM.
  - Specify the Name and Location of the VM.
  - Choose Generation 1 for broader compatibility.
- Configure VM Settings:
  - RAM: Allocate at least 4 GB of RAM (6 GB or more is recommended for better performance).
  - Processor: Assign an appropriate number of virtual processors based on the resources of your host machine.
  - Networking: Connect the VM to a virtual switch to allow network access.
- Attach the RHEL ISO File:
  - In the Connect Virtual Hard Disk step, choose Create a virtual hard disk and allocate sufficient storage (at least 40 GB).
  - Go to Installation Options and select Install an operating system from a bootable CD/DVD-ROM.
  - Browse and attach the RHEL ISO file you downloaded earlier.
- Configure Boot Settings:
  - Ensure the DVD Drive is the first boot device in the Firmware section of the VM settings.
- Start the VM:
  - Right-click the newly created VM in Hyper-V Manager and click Connect, then select Start.
  - The VM should boot from the RHEL ISO, and the installation process will begin.

RedHat official instructions:
https://www.youtube.com/watch?v=5A_Bucrl34A

https://www.linuxtechi.com/how-to-install-freeipa-server-on-rhel/

Setting hostname

```
ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 192.168.0.43  netmask 255.255.255.0  broadcast 192.168.0.255
        inet6 fda5:8943:8dcd:5147:215:5dff:fe00:2804  prefixlen 64  scopeid 0x0<global>
        inet6 fe80::215:5dff:fe00:2804  prefixlen 64  scopeid 0x20<link>
        ether 00:15:5d:00:28:04  txqueuelen 1000  (Ethernet)
        RX packets 2935303  bytes 4325927621 (4.0 GiB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 710821  bytes 67643458 (64.5 MiB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 65536
        inet 127.0.0.1  netmask 255.0.0.0
        inet6 ::1  prefixlen 128  scopeid 0x10<host>
        loop  txqueuelen 1000  (Local Loopback)
        RX packets 31209  bytes 10857313 (10.3 MiB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 31209  bytes 10857313 (10.3 MiB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

[pcaric@localhost ~]$ !2
sudo vim /etc/hosts
[pcaric@localhost ~]$ sudo cat /etc/hosts
127.0.0.1   localhost localhost.localdomain localhost4 localhost4.localdomain4
::1         localhost localhost.localdomain localhost6 localhost6.localdomain6
192.168.0.43 idm.example.test idm

[pcaric@localhost ~]$
[pcaric@localhost ~]$ nslookup idm.example.test
Server:         127.0.0.1
Address:        127.0.0.1#53

Name: idm.example.test
Address: 192.168.0.43
```

Update OS and installing Freeipa and DNS

sudo dnf update -y
sudo dnf install freeipa-server freeipa-server-dns -y
sudo ipa-server-install --setup-dns

Setup complete

Next steps:
1. You must make sure these network ports are open:
TCP Ports:
* 80, 443: HTTP/HTTPS
* 389, 636: LDAP/LDAPS
* 88, 464: kerberos
* 53: bind
UDP Ports:
* 88, 464: kerberos
* 53: bind
* 123: ntp

Firewall enabling:
sudo firewall-cmd --permanent
--add-port={80/tcp,443/tcp,389/tcp,636/tcp,88/tcp,464/tcp,53/tcp,88/udp,464/udp,53/udp,123/udp}
sudo firewall-cmd --reload

# TCP Ports
sudo iptables -A INPUT -p tcp --dport 80 -j ACCEPT # HTTP
sudo iptables -A INPUT -p tcp --dport 443 -j ACCEPT # HTTPS
sudo iptables -A INPUT -p tcp --dport 389 -j ACCEPT # LDAP
sudo iptables -A INPUT -p tcp --dport 636 -j ACCEPT # LDAPS
sudo iptables -A INPUT -p tcp --dport 88 -j ACCEPT # Kerberos
sudo iptables -A INPUT -p tcp --dport 464 -j ACCEPT # Kerberos
sudo iptables -A INPUT -p tcp --dport 53 -j ACCEPT # DNS

# UDP Ports
sudo iptables -A INPUT -p udp --dport 88 -j ACCEPT # Kerberos
sudo iptables -A INPUT -p udp --dport 464 -j ACCEPT # Kerberos
sudo iptables -A INPUT -p udp --dport 53 -j ACCEPT # DNS
sudo iptables -A INPUT -p udp --dport 123 -j ACCEPT # NTP

Backup certificate:
sudo cp /root/cacert.p12 //home/pcaric/certbackup/cacert.p12

Checking after installation and setting firewall:
sudo systemctl
status ipa sudo systemctl status named-pkcs11
sudo systemctl status dirsrv.target
sudo systemctl status httpd
sudo systemctl status krb5kdc
sudo systemctl status kadmin

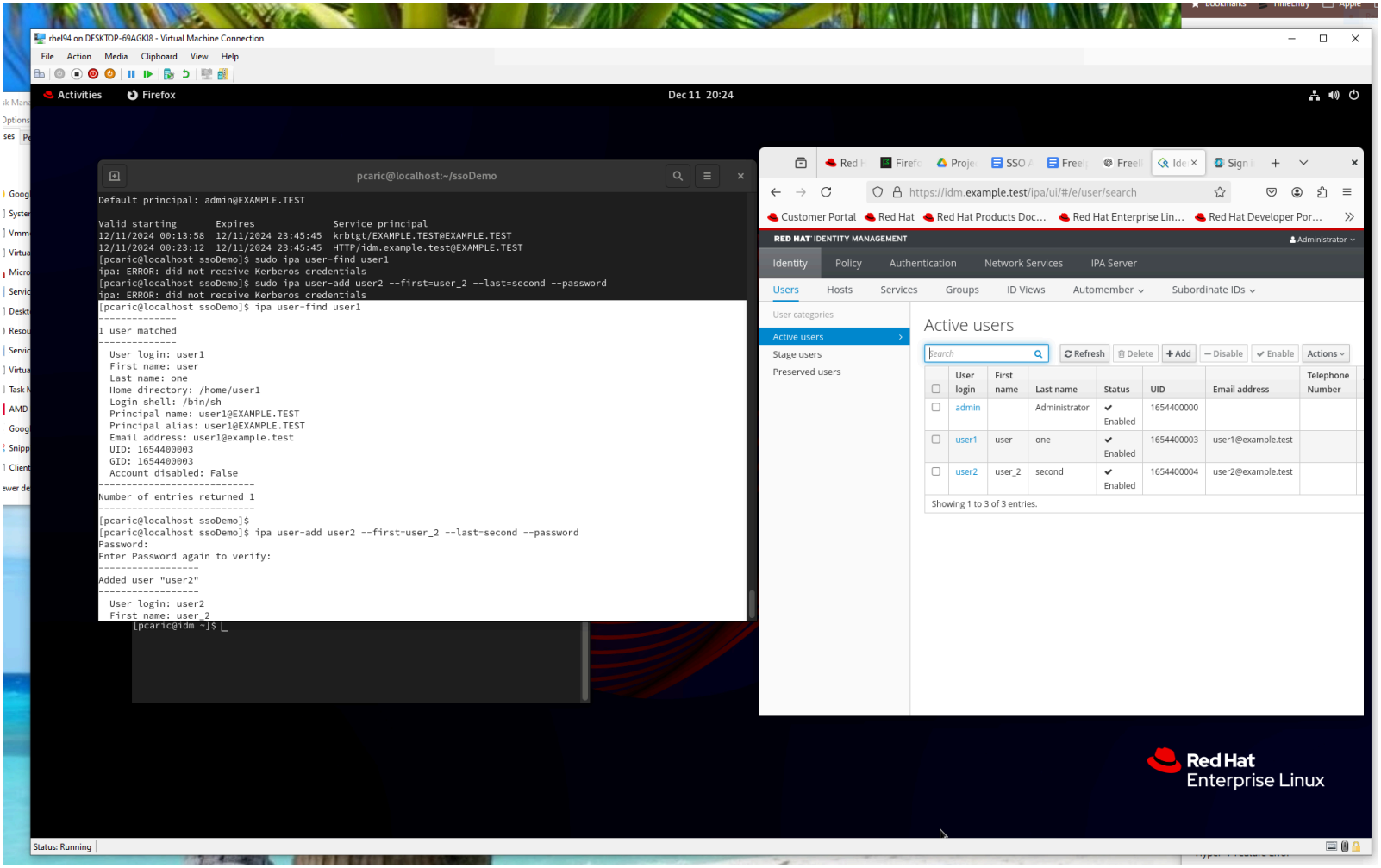
Kerberos settings

Setting Kerberos ticket for admin

pcaric@localhost ~]$ kinit admin
[pcaric@localhost ~]$ klist
Ticket cache: KCM:1000
Default principal: admin@EXAMPLE.TEST

Valid starting Expires Service principal
12/11/2024 00:13:58 12/11/2024 23:45:45 krbtgt/EXAMPLE.TEST@EXAMPLE.TEST
12/11/2024 00:23:12 12/11/2024 23:45:45 HTTP/idm.example.test@EXAMPLE.TEST
[pcaric@localhost ~]$

Accessing Kerberos via web page



https://idm.example.test/ipa/ui

Add user1 via web page, it can also be added via terminal:
ipa user-add user1 --first=user_1 --last=second --password

and checked with:
pa user-find user1

Checking with ldapsearch:
ldapsearch -x -h idm.example.test -D "cn=Directory Manager" -w paola123 -b "cn=users,cn=accounts,dc=example,dc=test"

Setting web applications

```
[pcaric@localhost ~]$ sudo mkdir -p /var/www/app1.com/public_html
[pcaric@localhost ~]$ sudo mkdir -p /var/www/app2.com/public_html
[pcaric@localhost ~]$
[pcaric@localhost ~]$
[pcaric@localhost ~]$ sudo vim /var/www/app1.com/public_html/index.html
[pcaric@localhost ~]$ sudo vim /var/www/app2.com/public_html/index.html
[pcaric@localhost ~]$

[pcaric@localhost conf.d]$ cat /var/www/app1.com/public_html/index.html
<!DOCTYPE html>
<html lang="en">
<head>
        <meta charset="UTF-8">
        <meta name="viewport" content="width=device-width, initial-scale=1.0">
        <title>Keycloak Demo App 1</title>
        <link href="https://cdn.jsdelivr.net/npm/bootstrap@5.3.0-alpha3/dist/css/bootstrap.min.css" rel="stylesheet">
        <script src="https://cdn.jsdelivr.net/npm/bootstrap@5.3.0-alpha3/dist/js/bootstrap.bundle.min.js"></script>
        <script src="https://cdnjs.cloudflare.com/ajax/libs/keycloak-js/21.0.2/keycloak.min.js"></script>
</head>
<body class="bg-light">
  <div class="container py-5">
    <div class="row justify-content-center">
      <div class="col-md-6 text-center">
        <h1 class="mb-4">Welcome to the Demo App 1</h1>
        <div>
          <button id="loginBtn" class="btn btn-primary btn-lg mb-3"
                onclick="window.location.href = '/login'">Login</button>
        </div>
      </div>
    </div>
  </div>
</body>

</html>
```

do same for the app2

Web page after login: app1after.html

```
[pcaric@localhost conf.d]$ cat /var/www/app1.com/public_html/app1after.html
<!DOCTYPE html>
<html lang="en">
<head>
        <meta charset="UTF-8">
        <meta name="viewport" content="width=device-width, initial-scale=1.0">
        <title>Keycloak Demo App 1</title>
        <link href="https://cdn.jsdelivr.net/npm/bootstrap@5.3.0-alpha3/dist/css/bootstrap.min.css" rel="stylesheet">
        <script src="https://cdn.jsdelivr.net/npm/bootstrap@5.3.0-alpha3/dist/js/bootstrap.bundle.min.js"></script>
        <script src="https://cdnjs.cloudflare.com/ajax/libs/keycloak-js/21.0.2/keycloak.min.js"></script>
</head>
```

```
<body class="bg-light">
        <nav class="navbar navbar-expand-lg navbar-dark bg-primary">
                <div class="container-fluid">
                        <a class="navbar-brand" href="#">You successfully log in at Demo App 1</a>
                        <button class="navbar-toggler" type="button" data-bs-toggle="collapse"
data-bs-target="#navbarNav">
                                <span class="navbar-toggler-icon"></span>
                        </button>
                </div>
        </nav>

</body>
</html>
```

do same for the app2

Setting Apache server, reverse proxy with certificates

```
[pcaric@localhost ~]$ sudo mkdir -p /etc/ssl/app2
[pcaric@localhost ~]$ sudo mkdir -p /etc/ssl/app1
[pcaric@localhost ~]$
[pcaric@localhost ~]$
[pcaric@localhost ~]$
[pcaric@localhost ~]$
[pcaric@localhost ~]$ sudo openssl req -x509 -nodes -days 365 -newkey rsa:2048  -keyout /etc/ssl/app1/privkey.pem
        -out /etc/ssl/app1/fullchain.pem
...+.+......+.....+...+.+...+++++++++++++++++++++++++++++++++++++++++*..+.+.........+...+.....+......++++++++++++++++++
++++++++++++++++++*.+......+.....................+...+............+..+.........+....+......+......+.............+.......+..+......+....+..+......+.......
..+......+..........+..+.+......+...........+............+...+...+....+...+..+..............+.+...........+...+...+....+...+........+...+......+......+.......+......+
.....+.+........+...+....+.....+....+...........+...+.+.....+.........+...+.........+.+...+...........+.....+....+...+.....+...+....+.......+.........+.+.......
+.+.....+.+..+.........................+...+........+......+.+.....+.......+..+......+...+.+...+.....+...+....+...+..+....+.....+.......+..+...+............+.......
+...+...+.....+..............+............+.+............+..+.+.....+....+...+..+............+....+......+.....+.+.....+...+..........+...........+......+....+.......
..........++++++
..+.........+.+++++++++++++++++++++++++++++++++++++++*........++++++++++++++++++++++++++++++++++++++++*..+
....+.....+.++++++
-----
You are about to be asked to enter information that will be incorporated
into your certificate request.
What you are about to enter is what is called a Distinguished Name or a DN.
There are quite a few fields but you can leave some blank
For some fields there will be a default value,
If you enter '.', the field will be left blank.
-----
Country Name (2 letter code) [XX]:HR
State or Province Name (full name) []:
Locality Name (eg, city) [Default City]:
Organization Name (eg, company) [Default Company Ltd]:
Organizational Unit Name (eg, section) []:
Common Name (eg, your name or your server's hostname) []:app1.com
Email Address []:
[pcaric@localhost ~]$
[pcaric@localhost ~]$
```

```
[pcaric@localhost ~]$
[pcaric@localhost ~]$ sudo openssl req -x509 -nodes -days 365 -newkey rsa:2048  -keyout /etc/ssl/app2/privkey.pem
        -out /etc/ssl/app2/fullchain.pem
......+..+...+...+....+...+........+......+.++++++++++++++++++++++++++++++++++++++++*........+.....+....+...........+.+..+......+.....
..+.......+...........+.........+.........+.....+....+......+...+..................+..+.............+.............+.......+...+...+...++++++++++++++++++
++++++++++++++++++++*.+...+.........+...+..................+..+......+.+.....+.+.....+...+..........+.........+..+.............+......+.....+.........
..+...+..........+.............+.+.....+.+.....+...+...........+....+.........+..+...+.+......+...+..+......+.........+..+......+.+......+..+.+.....+.+.....+.+
............+..+.........+...+..................+..+..................+...++++++
...+...+.+.....+..............+.+..+.+..+...........++++++++++++++++++++++++++++++++++++++++*.+....+......+........+.+......+.....+..
.+...+...+......++++++++++++++++++++++++++++++++++++++++*....+.................+.................+...+............................+..+.......
+..+......+.........+..................+.........+........+...+....+...+...+..+.........+..+......+......+...+......+.+........+...+.........................+.....+....
........+.+......+......+...+.....................+..................+..+...+...+...+....+...+...+.........++++++
-----
You are about to be asked to enter information that will be incorporated
into your certificate request.
What you are about to enter is what is called a Distinguished Name or a DN.
There are quite a few fields but you can leave some blank
For some fields there will be a default value,
If you enter '.', the field will be left blank.
-----
Country Name (2 letter code) [XX]:HR
State or Province Name (full name) []:
Locality Name (eg, city) [Default City]:
Organization Name (eg, company) [Default Company Ltd]:
Organizational Unit Name (eg, section) []:
Common Name (eg, your name or your server's hostname) []:app2.com
Email Address []:
```

Setting apache configuration - after Keycloak is configured

Install module for Apache for OIDC:

```
sudo dnf install mod_auth_openidc -y
```

```
<VirtualHost *:80>
        ServerName app1.com

        Redirect permanent / https://app1.com/
</VirtualHost>

<VirtualHost *:443>
        ServerName app1.com
        ServerAlias www.app1.com
        DocumentRoot /var/www/app1.com/public_html


        <Directory /var/www/app1.com/public_html>
        Options Indexes FollowSymLinks
        AllowOverride All
```

```
        Require all granted
        </Directory>

        SSLEngine on
        SSLCertificateFile /etc/ssl/app1/fullchain.pem
        SSLCertificateKeyFile /etc/ssl/app1/privkey.pem

        # Keycloak settings
        OIDCProviderMetadataURL http://idm.example.test:9080/realms/PaolaCompany/.well-known/openid-configuration
        OIDCClientID app1
        OIDCClientSecret DQevstxSoBvijSnTaV10jYCrfFIvHgWC
        OIDCRedirectURI https://app1.com/app1after.html
        OIDCResponseType code
        OIDCScope "openid email profile"


        # Mandatory Crypto Passphrase for OIDC
        OIDCCryptoPassphrase a0f256f445326a385ed81b9eb8c296c4eedbbf1aa164545c14597ddcd8a3b861

        <Location /login>
        AuthType openid-connect
        Require valid-user
        </Location>

        #ProxyPreserveHost On
        #ProxyPass / http://app1.com
        #ProxyPassReverse / http://app1.com

        ErrorLog /var/log/httpd/app1-error.log
        CustomLog /var/log/httpd/app1-access.log combined
</VirtualHost>
```

From the Keycloak Client / app1 / credentials copy secret for
OIDCClientSecret

Generating OIDCCryptoPassphrase:
openssl rand -hex 32
now copy / paste this for OIDCCryptoPassphrase

app2 credentials from Keyclaok clien2 (app2): 07hgI01ynmiBEQBadRAdyhpLoATVPLlH
PassPhrase for app2: f7c73a7824b090c347bdaae11ba465c320025340c29ae6cebc1b1f781f83571a

[pcaric@localhost ~]$ sudo apachectl configtest
Syntax OK

Keycloak installation

Enable port 9080 (for Keycloak) in the RedHat firewall to be able to access from the host
sudo firewall-cmd --add-port=9080/tcp

IMPORTANT SETTINGS ON THE WINDOWS HOST
c:/windows/system32/drivers/etc/hosts
add this line in the file above
192.168.0.43 app1.com app2.com idm.example.test

(192.168.0.43 is the IP of the HyperV VM so it can be different)

this has to be done in order to be able to access:
app1.com (Web app1)
app2.com (Web app2)
idm.example.com:9080 (Keycloak)

from the host's browser

DOWNLOAD KEYCLOAK:
https://medium.com/devsecops-community/how-to-install-keycloak-on-linux-full-setup-dev-production-modes-and-ad-integration-6429d75fbd62

DOWNLOAD KEYCLOAK 23 OR SOME NEWER VERSION:
`wget https://github.com/keycloak/keycloak/releases/download/23.0.3/keycloak-23.0.3.tar.gz`

`tar -xf keycloak-23.0.3.tar.gz`

`export KEYCLOAK_ADMIN=admin`

`export KEYCLOAK_ADMIN_PASSWORD=admin`

`cd keycloak-23.0.3`

START KEYCLOAK IN SEPARATE TERMINAL TO MONITOR LOGS

`bin/kc.sh start-dev –http-port=9080`

ACCESS KEYCLOAK FROM THE HOST
http://idm.example.test:9080

Configure Keycloak to Use FreeIPA as an LDAP User Federation Provider

Integrating FreeIPA with Keycloak allows Keycloak to authenticate users from FreeIPA. We'll set up **LDAP User Federation** in Keycloak.

- **Access Keycloak Admin Console:**
  - **Open Your Browser** and navigate to: `http://idm.example.test:9080`
  - **Log In to Keycloak:**
    - **Username:** `admin`

        - **Password:** `admin`
- **Create the "PaolaCompany" Realm:**
    - **Add a New Realm:**
        - In the top-left corner, click on the current realm (e.g., `master`) dropdown.
        - Click **"Add Realm"**.
    - **Configure Realm Details:**
        - **Name:** `PaolaCompany`
        - Click **"Create"**.
    - Create client:
        - root url: https://app1.com
        - home url: https://app1.com
        - valid redirect url: https://app1.com/app1after.html
        - valid post logout: https://app1.com/app1after.html
        - web origins & admin: https://app1.com
    - Capability config: Set Client authentication to ON and SAVE
    - After saving there will be Credentials tab. Go there and copy Client secret and paste
    - in the Apache conf file for OIDCClientSecret.
- **Add LDAP User Federation Provider:**
    - **Navigate to User Federation:**
        - In the left-hand menu, under the `PaolaCompany` realm, click **"User Federation"**.
    - **Add LDAP Provider:**
        - Click **"Add provider"** and select **"ldap"** from the dropdown.
    - **Configure LDAP Settings:**
        - **Edit Mode:** `READ_ONLY`
          (This ensures Keycloak does not modify FreeIPA data.)
        - **Vendor:** `Other`
        - **Username LDAP Attribute:** `uid`
        - **RDN LDAP Attribute:** `uid`
        - **UUID LDAP Attribute:** `entryUUID`
        - **User Object Classes:** `inetOrgPerson`
        - **Connection URL:** `ldap://idm.example.test`
          (Use `ldaps://idm.example.test` if you have TLS configured.)
        - **Users DN:** `cn=users,cn=accounts,dc=example,dc=test`
        - **Bind DN:** `uid=admin,cn=users,cn=accounts,dc=example,dc=test`
        - **Bind Credential:** Enter the **Directory Manager** password you set during FreeIPA installation.
        - **Use Truststore SPI:** `ldapsOnly` if using `ldaps://`, otherwise `never`.
        - **Connection Pooling:** Enable or disable based on your needs (default is typically fine).
        - **Cache Settings:** Adjust as needed, but defaults are suitable for most scenarios.
    - **Test Connection and Authentication:**
        - Click **"Test connection"** to ensure Keycloak can reach FreeIPA.
        - Click **"Test authentication"** to verify the Bind DN and password.
    - **Save the Provider:**
        - Once both tests are successful, click **"Save"**.
    - **Synchronization:**
        - After saving, you can **synchronize all users** from FreeIPA to Keycloak by clicking **"Synchronize all users"**.
- **Verify User Federation:**
    - **Navigate to Users:**
        - Click **"Users"** under the `PaolaCompany` realm.
    - **Check for Imported Users:**
        - You should see `admin` and `user1` listed, reflecting the users from FreeIPA.

Restart apache

```
pcaric@localhost ~]$ sudo systemctl restart httpd
[pcaric@localhost ~]$ sudo systemctl status httpd
● httpd.service - The Apache HTTP Server
     Loaded: loaded (/usr/lib/systemd/system/httpd.service; disabled; preset: disabled)
     Drop-In: /etc/systemd/system/httpd.service.d
     └─ipa.conf
     Active: active (running) since Wed 2024-12-11 09:57:22 CET; 12s ago
     Docs: man:httpd.service(8)
     Process: 194343 ExecStartPre=/usr/libexec/ipa/ipa-httpd-kdcproxy (code=exited, status=0/SUCCESS)
   Main PID: 194345 (httpd)
     Status: "Total requests: 0; Idle/Busy workers 100/0;Requests/sec: 0; Bytes served/sec:   0 B/sec"
     Tasks: 230 (limit: 35692)
     Memory: 337.4M
     CPU: 4.914s
     CGroup: /system.slice/httpd.service
     ├─194345 /usr/sbin/httpd -DFOREGROUND
     ├─194347 /usr/sbin/httpd -DFOREGROUND
     ├─194348 /usr/sbin/httpd -DFOREGROUND
     ├─194352 "(wsgi:kdcproxy)" -DFOREGROUND
     ├─194353 "(wsgi:kdcproxy)" -DFOREGROUND
     ├─194354 "(wsgi:ipa)          " -DFOREGROUND
     ├─194356 "(wsgi:ipa)          " -DFOREGROUND
     ├─194357 "(wsgi:ipa)          " -DFOREGROUND
     ├─194358 "(wsgi:ipa)          " -DFOREGROUND
     ├─194359 /usr/sbin/httpd -DFOREGROUND
     ├─194360 /usr/sbin/httpd -DFOREGROUND
     └─194372 /usr/sbin/httpd -DFOREGROUND

Dec 11 09:57:21 idm.example.test systemd[1]: Starting The Apache HTTP Server...
Dec 11 09:57:22 idm.example.test ipa-httpd-kdcproxy[194343]: ipa: INFO: KDC proxy enabled
Dec 11 09:57:22 idm.example.test ipa-httpd-kdcproxy[194343]: ipa-httpd-kdcproxy: INFO          KDC proxy enabled
Dec 11 09:57:22 idm.example.test systemd[1]: Started The Apache HTTP Server.
Dec 11 09:57:22 idm.example.test httpd[194345]: Server configured, listening on: port 443, port 80
[pcaric@localhost ~]$
```

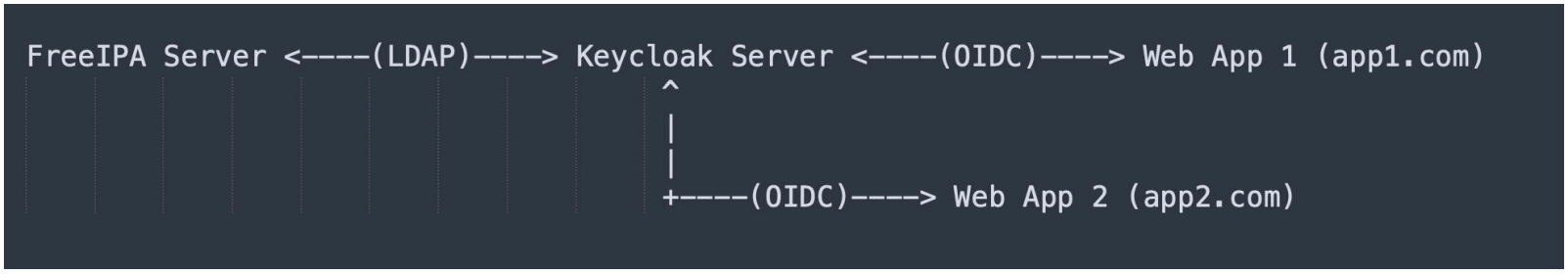
Testing SSO call flow

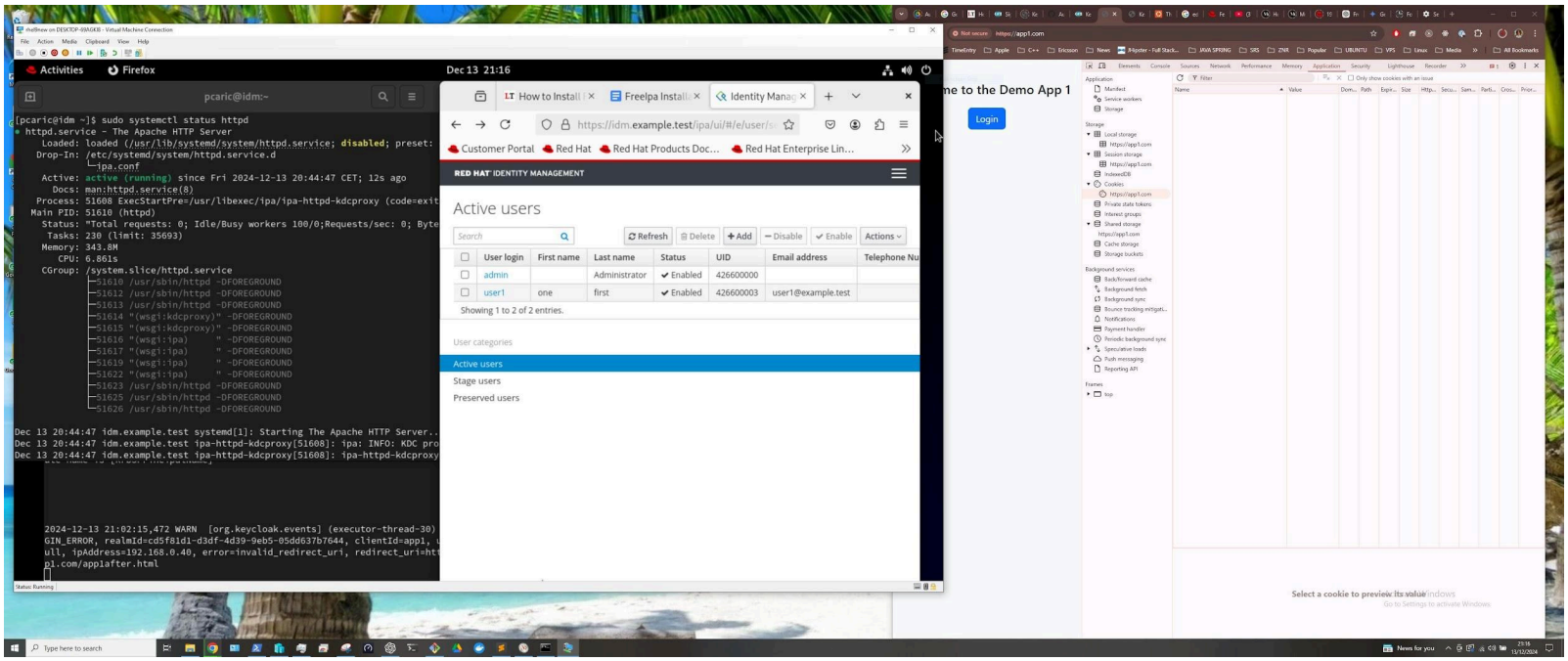
ON THE VM, TERMINALS

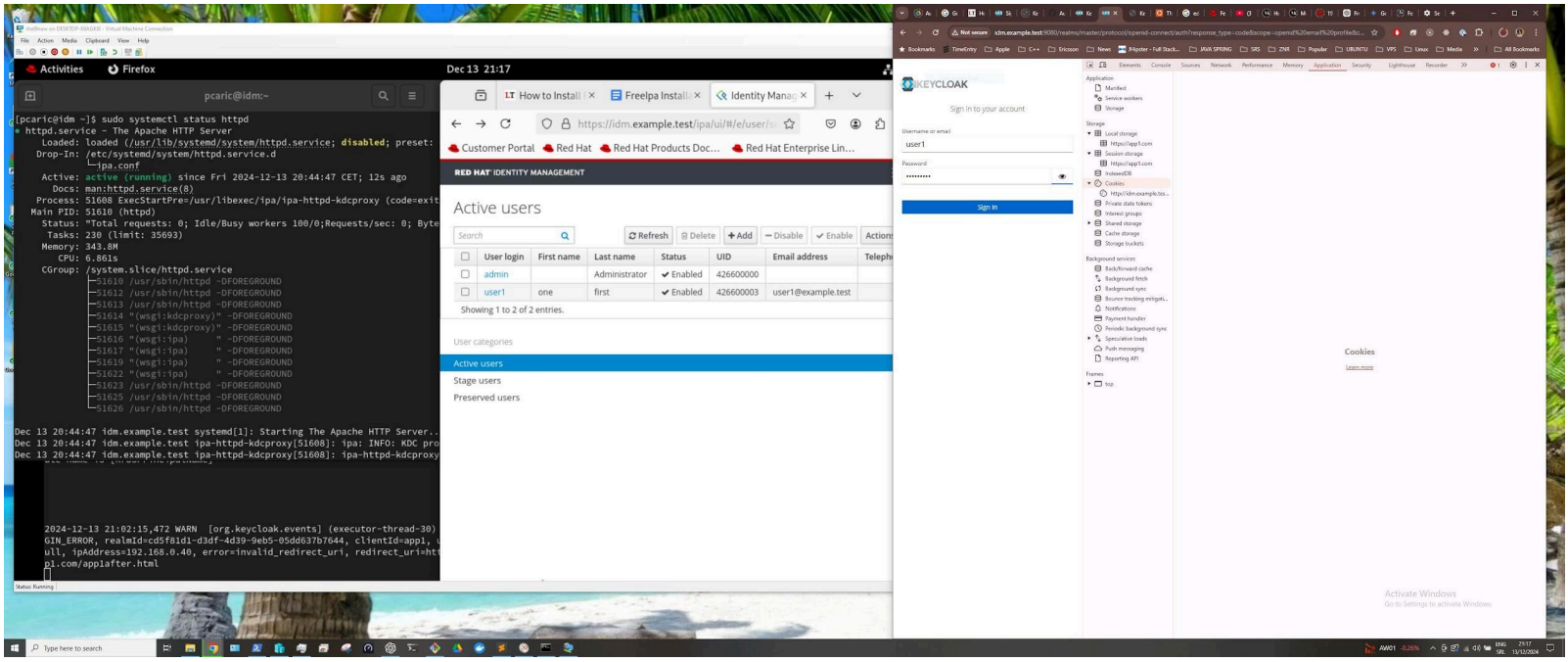
1) start Keyclaok in separate terminal: bin/kc.sh start-dev --http-port=9080
2) set keycloak proxy: sudo firewall-cmd --add-port=9080/tcp

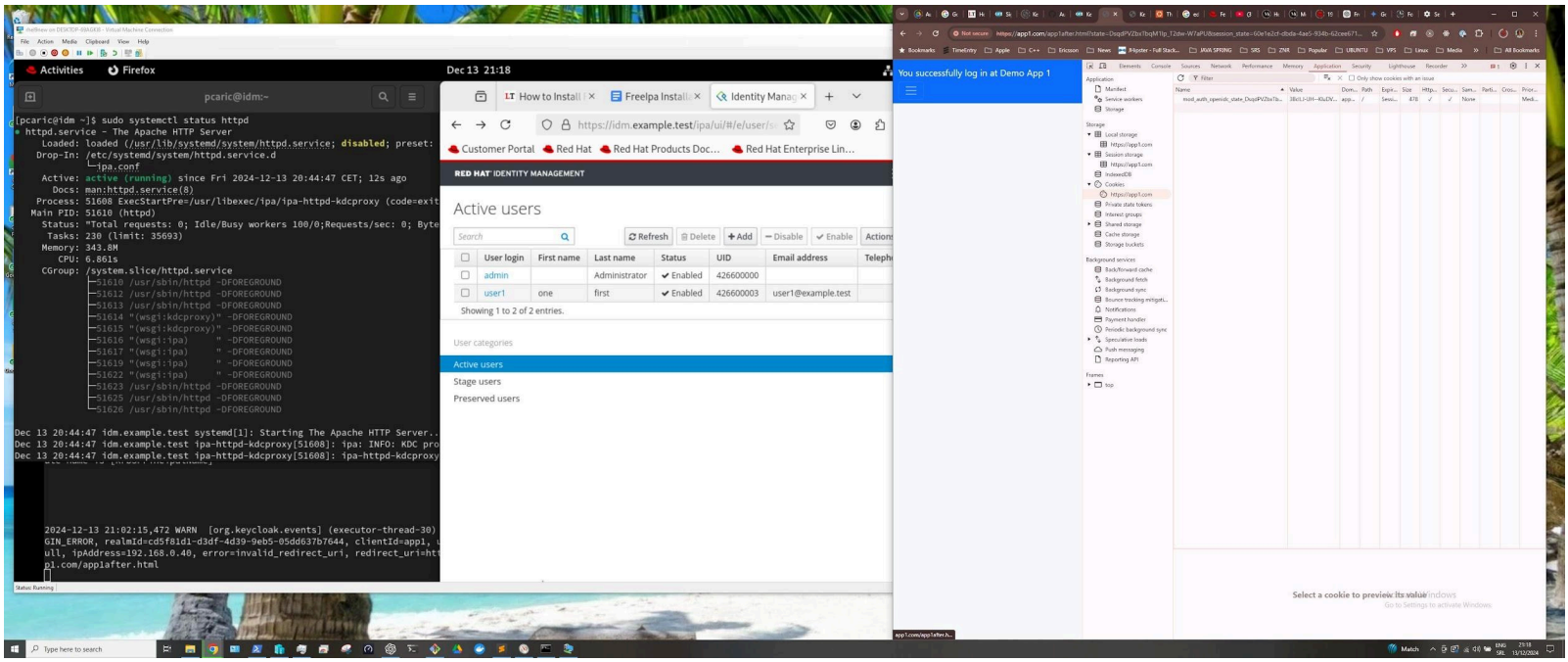
ON THE HOST MACHINE, WEB BROWSER

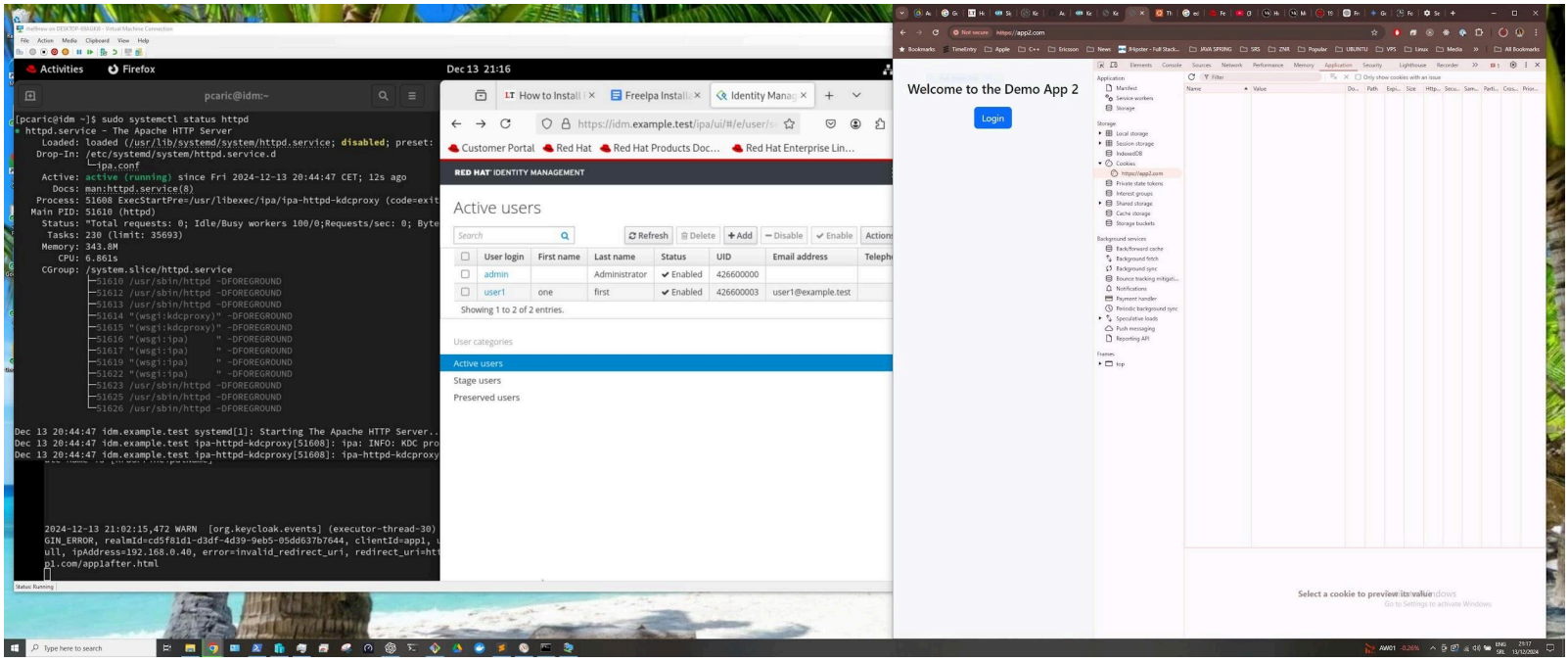
3) access keycloak from the host: http://idm.example.test:9080
4) go to the https://app1.com
5) clock on the login button
6) insert credentials user1 / password1 (set before via Kerberos)
7) keycloak will use ldap to check the users's credentials stored in the FreeIPA server
8) since user is valid keycloak will distribute token for authentication
9) token is saved in the browser's storage - cookie
10) now go to the other app https://app2.com and click on the login button
11) this time user will not need to fill credentials, he will be forwarded to the app2 web

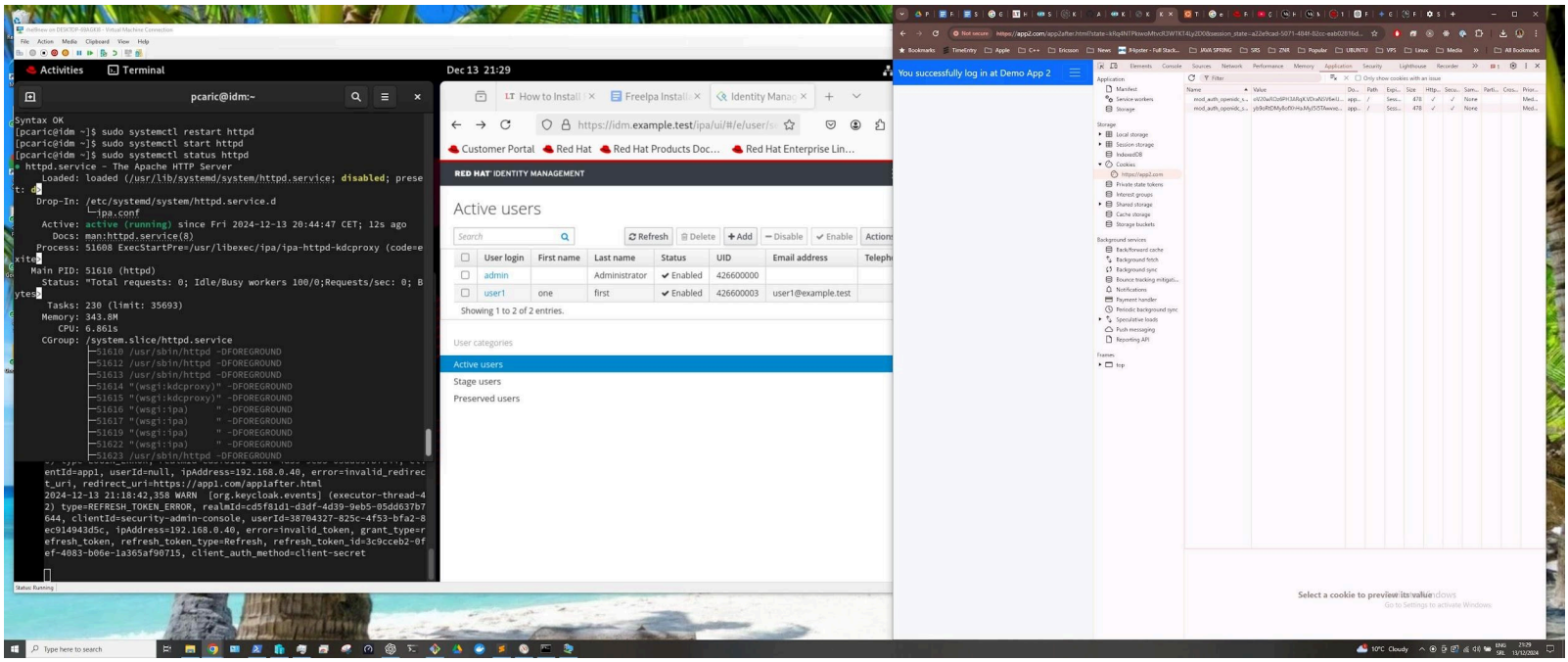





Activities
Firefox
Dec 13 21:17
pcaric@idm:~
[pcaric@idm ~]$ sudo systemctl status httpd
● httpd.service - The Apache HTTP Server
Loaded: loaded (/usr/lib/systemd/system/httpd.service; disabled; preset:
Drop-In: /etc/systemd/system/httpd.service.d
└─ipa.conf
Active: active (running) since Fri 2024-12-13 20:44:47 CET; 12s ago
Docs: man:httpd.service(8)
Process: 51608 ExecStartPre=/usr/libexec/ipa/ipa-httpd-kdcproxy (code=exit
Main PID: 51610 (httpd)
Status: "Total requests: 0; Idle/Busy workers 100/0;Requests/sec: 0; Byte
Tasks: 230 (limit: 35693)
Memory: 343.8M
CPU: 6.861s
CGroup: /system.slice/httpd.service
├─51610 /usr/sbin/httpd -DFOREGROUND
├─51612 /usr/sbin/httpd -DFOREGROUND
├─51613 /usr/sbin/httpd -DFOREGROUND
├─51614 "(wsgi:kdcproxy)" -DFOREGROUND
├─51615 "(wsgi:kdcproxy)" -DFOREGROUND
├─51616 "(wsgi:ipa)" -DFOREGROUND
├─51617 "(wsgi:ipa)" -DFOREGROUND
├─51619 "(wsgi:ipa)" -DFOREGROUND
├─51622 "(wsgi:ipa)" -DFOREGROUND
├─51623 /usr/sbin/httpd -DFOREGROUND
├─51625 /usr/sbin/httpd -DFOREGROUND
└─51626 /usr/sbin/httpd -DFOREGROUND
Dec 13 20:44:47 idm.example.test systemd[1]: Starting The Apache HTTP Server..
Dec 13 20:44:47 idm.example.test ipa-httpd-kdcproxy[51608]: ipa: INFO: KDC pro
Dec 13 20:44:47 idm.example.test ipa-httpd-kdcproxy[51608]: ipa-httpd-kdcproxy
2024-12-13 21:02:15,472 WARN [org.keycloak.events] (executor-thread-30)
GIN_ERROR, realmId=cd5f81d1-d3df-4d39-9eb5-05dd637b7644, clientId=app1,
ull, ipAddress=192.168.0.40, error=invalid_redirect_uri, redirect_uri=ht
p1.com/app1after.html
How to Install
Freelpa Install
Identity Manag
https://idm.example.test/ipa/ui/#/e/user/s
Customer Portal
Red Hat
Red Hat Products Doc...
Red Hat Enterprise Lin...
RED HAT IDENTITY MANAGEMENT
Active users
Search
Refresh
Delete
Add
Disable
Enable
User login
First name
Last name
Status
UID
Email address
admin
Administrator
Enabled
426600000
user1
one
first
Enabled
426600003
user1@example.test
Showing 1 to 2 of 2 entries.
User categories
Active users
Stage users
Preserved users
KEYCLOAK
Sign in to your account
Username or email
user1
Password
Sign in
Cookies
Learn more
Activate Windows
Go to Settings to activate Windows.


Activities
Firefox
Dec 13 21:18
pcaric@idm:~
[pcaric@idm ~]$ sudo systemctl status httpd
● httpd.service - The Apache HTTP Server
Loaded: loaded (/usr/lib/systemd/system/httpd.service; disabled; preset:
Drop-In: /etc/systemd/system/httpd.service.d
└─ipa.conf
Active: active (running) since Fri 2024-12-13 20:44:47 CET; 12s ago
Docs: man:httpd.service(8)
Process: 51608 ExecStartPre=/usr/libexec/ipa/ipa-httpd-kdcproxy (code=exit
Main PID: 51610 (httpd)
Status: "Total requests: 0; Idle/Busy workers 100/0;Requests/sec: 0; Byte
Tasks: 230 (limit: 35693)
Memory: 343.8M
CPU: 6.861s
CGroup: /system.slice/httpd.service
├─51610 /usr/sbin/httpd -DFOREGROUND
├─51612 /usr/sbin/httpd -DFOREGROUND
├─51613 /usr/sbin/httpd -DFOREGROUND
├─51614 "(wsgi:kdcproxy)" -DFOREGROUND
├─51615 "(wsgi:kdcproxy)" -DFOREGROUND
├─51616 "(wsgi:ipa)" -DFOREGROUND
├─51617 "(wsgi:ipa)" -DFOREGROUND
├─51619 "(wsgi:ipa)" -DFOREGROUND
├─51622 "(wsgi:ipa)" -DFOREGROUND
├─51623 /usr/sbin/httpd -DFOREGROUND
├─51625 /usr/sbin/httpd -DFOREGROUND
└─51626 /usr/sbin/httpd -DFOREGROUND
Dec 13 20:44:47 idm.example.test systemd[1]: Starting The Apache HTTP Server..
Dec 13 20:44:47 idm.example.test ipa-httpd-kdcproxy[51608]: ipa: INFO: KDC pro
Dec 13 20:44:47 idm.example.test ipa-httpd-kdcproxy[51608]: ipa-httpd-kdcproxy
2024-12-13 21:02:15,472 WARN [org.keycloak.events] (executor-thread-30)
GIN_ERROR, realmId=cd5f81d1-d3df-4d39-9eb5-05dd637b7644, clientId=app1,
ull, ipAddress=192.168.0.40, error=invalid_redirect_uri, redirect_uri=ht
p1.com/app1after.html
How to Install
Freelpa Install
Identity Manag
https://idm.example.test/ipa/ui/#/e/user/s
Customer Portal
Red Hat
Red Hat Products Doc...
Red Hat Enterprise Lin...
RED HAT IDENTITY MANAGEMENT
Active users
Search
Refresh
Delete
Add
Disable
Enable
User login
First name
Last name
Status
UID
Email address
admin
Administrator
Enabled
426600000
user1
one
first
Enabled
426600003
user1@example.test
Showing 1 to 2 of 2 entries.
User categories
Active users
Stage users
Preserved users
You successfully log in at Demo App 1
Select a cookie to preview its value


Activities
Firefox
Dec 13 21:16
pcaric@idm:~
[pcaric@idm ~]$ sudo systemctl status httpd
● httpd.service - The Apache HTTP Server
Loaded: loaded (/usr/lib/systemd/system/httpd.service; disabled; preset:
Drop-In: /etc/systemd/system/httpd.service.d
└─ipa.conf
Active: active (running) since Fri 2024-12-13 20:44:47 CET; 12s ago
Docs: man:httpd.service(8)
Process: 51608 ExecStartPre=/usr/libexec/ipa/ipa-httpd-kdcproxy (code=exit
Main PID: 51610 (httpd)
Status: "Total requests: 0; Idle/Busy workers 100/0;Requests/sec: 0; Byte
Tasks: 230 (limit: 35693)
Memory: 343.8M
CPU: 6.861s
CGroup: /system.slice/httpd.service
├─51610 /usr/sbin/httpd -DFOREGROUND
├─51612 /usr/sbin/httpd -DFOREGROUND
├─51613 /usr/sbin/httpd -DFOREGROUND
├─51614 "(wsgi:kdcproxy)" -DFOREGROUND
├─51615 "(wsgi:kdcproxy)" -DFOREGROUND
├─51616 "(wsgi:ipa)" -DFOREGROUND
├─51617 "(wsgi:ipa)" -DFOREGROUND
├─51619 "(wsgi:ipa)" -DFOREGROUND
├─51622 "(wsgi:ipa)" -DFOREGROUND
├─51623 /usr/sbin/httpd -DFOREGROUND
├─51625 /usr/sbin/httpd -DFOREGROUND
└─51626 /usr/sbin/httpd -DFOREGROUND
Dec 13 20:44:47 idm.example.test systemd[1]: Starting The Apache HTTP Server..
Dec 13 20:44:47 idm.example.test ipa-httpd-kdcproxy[51608]: ipa: INFO: KDC pro
Dec 13 20:44:47 idm.example.test ipa-httpd-kdcproxy[51608]: ipa-httpd-kdcproxy
2024-12-13 21:02:15,472 WARN [org.keycloak.events] (executor-thread-30)
GIN_ERROR, realmId=cd5f81d1-d3df-4d39-9eb5-05dd637b7644, clientId=app1,
ull, ipAddress=192.168.0.40, error=invalid_redirect_uri, redirect_uri=ht
p1.com/app1after.html
How to Install
Freelpa Install
Identity Manag
https://idm.example.test/ipa/ui/#/e/user/s
Customer Portal
Red Hat
Red Hat Products Doc...
Red Hat Enterprise Lin...
RED HAT IDENTITY MANAGEMENT
Active users
Search
Refresh
Delete
Add
Disable
Enable
Actions
User login
First name
Last name
Status
UID
Email address
admin
Administrator
Enabled
426600000
user1
one
first
Enabled
426600003
user1@example.test
Showing 1 to 2 of 2 entries.
User categories
Active users
Stage users
Preserved users
Welcome to the Demo App 2
Login
Select a cookie to preview its value


Activities
Terminal
Dec 13 21:29
pcaric@idm:~
Syntax OK
[pcaric@idm ~]$ sudo systemctl restart httpd
[pcaric@idm ~]$ sudo systemctl start httpd
[pcaric@idm ~]$ sudo systemctl status httpd
● httpd.service - The Apache HTTP Server
Loaded: loaded (/usr/lib/systemd/system/httpd.service; disabled; prese
Drop-In: /etc/systemd/system/httpd.service.d
└─ipa.conf
Active: active (running) since Fri 2024-12-13 20:44:47 CET; 12s ago
Docs: man:httpd.service(8)
Process: 51608 ExecStartPre=/usr/libexec/ipa/ipa-httpd-kdcproxy (code=e
Main PID: 51610 (httpd)
Status: "Total requests: 0; Idle/Busy workers 100/0;Requests/sec: 0; B
Tasks: 230 (limit: 35693)
Memory: 343.8M
CPU: 6.861s
CGroup: /system.slice/httpd.service
├─51610 /usr/sbin/httpd -DFOREGROUND
├─51612 /usr/sbin/httpd -DFOREGROUND
├─51613 /usr/sbin/httpd -DFOREGROUND
├─51614 "(wsgi:kdcproxy)" -DFOREGROUND
├─51615 "(wsgi:kdcproxy)" -DFOREGROUND
├─51616 "(wsgi:ipa)" -DFOREGROUND
├─51617 "(wsgi:ipa)" -DFOREGROUND
├─51619 "(wsgi:ipa)" -DFOREGROUND
├─51622 "(wsgi:ipa)" -DFOREGROUND
├─51623 /usr/sbin/httpd -DFOREGROUND
entId=app1, userId=null, ipAddress=192.168.0.40, error=invalid_redirec
t_uri, redirect_uri=https://app1.com/app1after.html
2024-12-13 21:18:42,358 WARN [org.keycloak.events] (executor-thread-4
2) type=REFRESH_TOKEN_ERROR, realmId=cd5f81d1-d3df-4d39-9eb5-05dd637b7
644, clientId=security-admin-console, userId=38704327-825c-4f53-bfa2-8
ec914943d5c, ipAddress=192.168.0.40, error=invalid_token, grant_type=r
efresh_token, refresh_token_type=Refresh, refresh_token_id=3c9cceb2-0f
ef-4083-b06e-1a365af90715, client_auth_method=client-secret
How to Install
Freelpa Install
Identity Manag
https://idm.example.test/ipa/ui/#/e/user/s
Customer Portal
Red Hat
Red Hat Products Doc...
Red Hat Enterprise Lin...
RED HAT IDENTITY MANAGEMENT
Active users
Search
Refresh
Delete
Add
Disable
Enable
Actions
User login
First name
Last name
Status
UID
Email address
admin
Administrator
Enabled
426600000
user1
one
first
Enabled
426600003
user1@example.test
Showing 1 to 2 of 2 entries.
User categories
Active users
Stage users
Preserved users
You successfully log in at Demo App 2
Select a cookie to preview its value

Materials and links

- https://centlinux.com/install-freeipa-on-rocky-linux/
- https://www.freeipa.org/page/Quick_Start_Guide
- https://infotechys.com/install_and_configure_ipa_idm_on_rhel_9/
- https://medium.com/devsecops-community/how-to-install-keycloak-on-linux-full-setup-dev-production-modes-and-ad-integration-6429d75fbd62
- https://www.reddit.com/r/FreeIPA/comments/y5icj2/keycloak_integration/
- ChatGpt https://chatgpt.com/ and Gemini https://gemini.google.com/ for consulting and reviewing tutorials