How-To Guides

Creating a Realm in Keycloak

A **realm** in Keycloak is the top-level container for managing users, roles, groups, identity providers, and applications. It provides complete logical isolation, making it ideal for multi-tenant systems or staging/production splits. This guide explains different ways to create a realm via the Admin Console, REST API, and Docker CLI while covering permissions, best practices, and troubleshooting.

Creating a Realm via Keycloak Admin Console

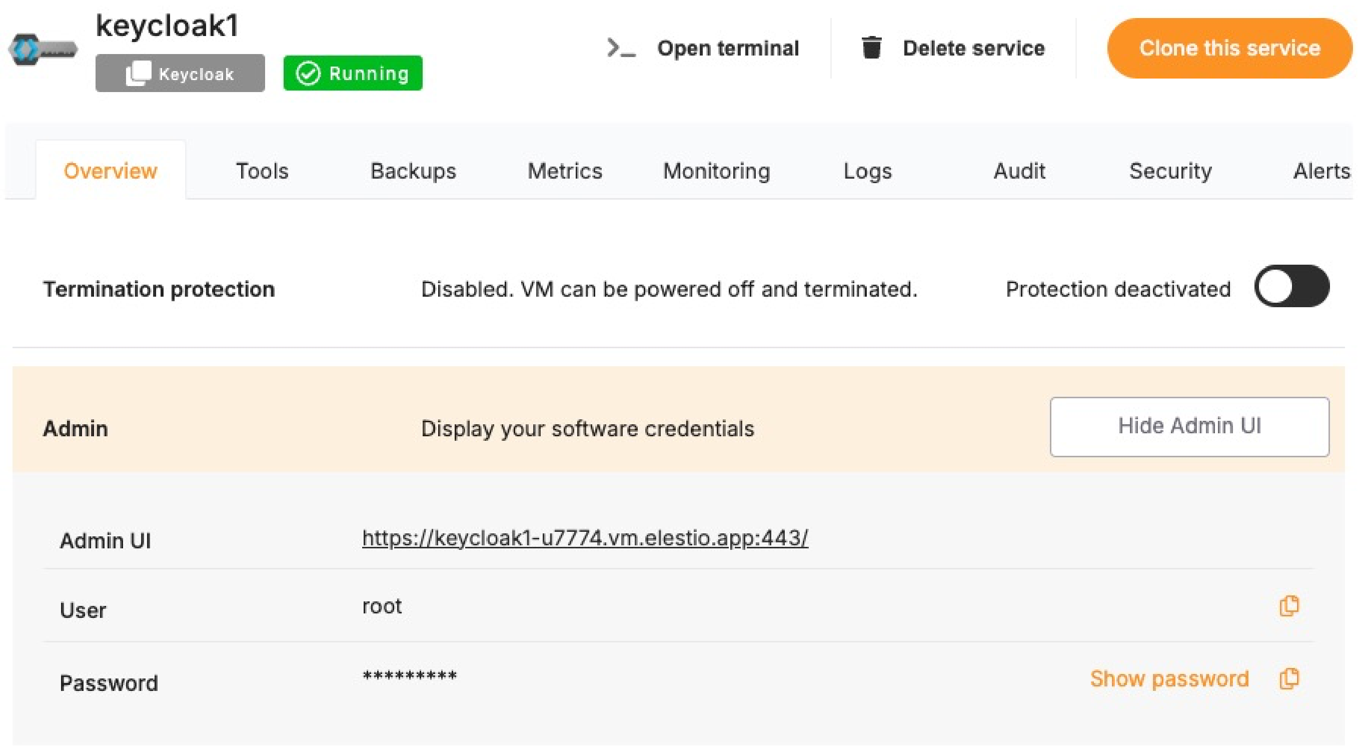
The Admin Console is the most straightforward way to create and manage realms using a web-based UI.

Access the Admin Console

Log in to your Keycloak Admin Console:

```
http://<your-keycloak-domain>/admin/
```

Use the **admin** account created during setup or one with realm management privileges.



Termination protection — Disabled. VM can be powered off and terminated. — Protection deactivated

Admin — Display your software credentials

Admin UI	https://keycloak1-u7774.vm.elestio.app:443/
User	root
Password	*********

Create a New Realm

1. Click the realm dropdown in the top-left corner (default is master).
2. Click **Create Realm**.
3. Enter the following details:

    - **Realm Name**: A unique name like customer-portal or internal-tools.
    - **Display Name**: Optional friendly name shown on login screens.

4. Click **Create**.

Configure Realm Settings

Once created, you can adjust behavior by navigating to

- **Realm Settings > Login**: Enable email verification, OTP, remember-me, etc.
- **Realm Settings > Themes**: Set custom themes for login and account pages

Creating a Realm via Keycloak REST API

For automation and CI/CD pipelines, use the Admin REST API.

Get Access Token

Use the master realm or a privileged realm with an admin user.

```
curl -X POST "https://<keycloak-domain>/realms/master/protocol/openid-connect/token" \
  -H "Content-Type: application/x-www-form-urlencoded" \
  -d "username=admin" \
  -d "password=admin-password" \
  -d "grant_type=password" \
  -d "client_id=admin-cli"
```

Save the access_token from the response.

Create the Realm

```
curl -X POST "https://<keycloak-domain>/admin/realms" \
  -H "Content-Type: application/json" \
  -H "Authorization: Bearer <access_token>" \
  -d '{
    "realm": "newrealm",
    "enabled": true,
    "displayName": "New Realm"
  }'
```

This creates a new realm called newrealm with default settings.

Creating a Realm via Docker CLI

If Keycloak is running inside a Docker container:

Access the Container

```
docker exec -it keycloak bash
```

Create Realm Using Import File

1. Create a JSON realm file (e.g., myrealm.json):

```
{
  "realm": "myrealm",
  "enabled": true
}
```

2. Run Keycloak with the import flag:

```
kc.sh import --file /opt/keycloak/data/import/myrealm.json
```

Or via Docker:

```
docker run -v $PWD:/opt/keycloak/data/import \
  quay.io/keycloak/keycloak:latest \
  import --file /opt/keycloak/data/import/myrealm.json
```

Required Permissions for Realm Creation

- Users must have manage-realm or admin roles in the master realm.
- If using the REST API, token must be obtained using admin-cli.

To grant permissions:

```
# From master realm
Users > admin > Role Mappings > Realm Roles > Assign 'admin'
```

Best Practices for Creating Realms

- **Use Descriptive Realm Names:** Avoid generic names like test or default. Use environment- or tenant-specific names like dev-project-x, production-client123.
- **Enable Login Hardening Features:** Under **Realm Settings > Login**:
  - Enable email verification
  - Disable user registration (unless required)
  - Enable OTP for 2FA
- **Use Theme Branding:** Upload and assign a custom login theme under **Themes** to reflect client or environment branding.
- **Automate via REST or Terraform:** For CI/CD deployments, automate realm provisioning using REST API or tools like Terraform (mrparkers/keycloak provider).

Common Issues and Troubleshooting

Issue	Possible Cause	Solution
403 Forbidden when creating via API	Access token lacks permission	Ensure token is generated from a user with admin role in master realm
Realm already exists	Attempting to recreate an existing realm	Use a different realm name or delete existing one before re-creating
Realm not listed in dropdown	Misconfiguration or missing role	Refresh UI or check admin user’s permissions
Docker import doesn’t create realm	File format error or wrong path	Ensure JSON is valid and mounted correctly in /opt/keycloak/data/import
Login page shows default theme	Custom theme not set	Go to **Realm Settings > Themes** and set your theme manually

Adding and Managing Users in Keycloak

Users in Keycloak represent the individuals or system accounts that authenticate and interact with your applications. This guide explains multiple methods to create and manage users via the Admin Console, REST API, and Docker CLI while covering required roles, best practices, and common issues.

Creating Users via Keycloak Admin Console

The Admin Console is the most user-friendly method to manage users and assign roles.

Access the Admin Console

Log in to your Keycloak Admin Console:

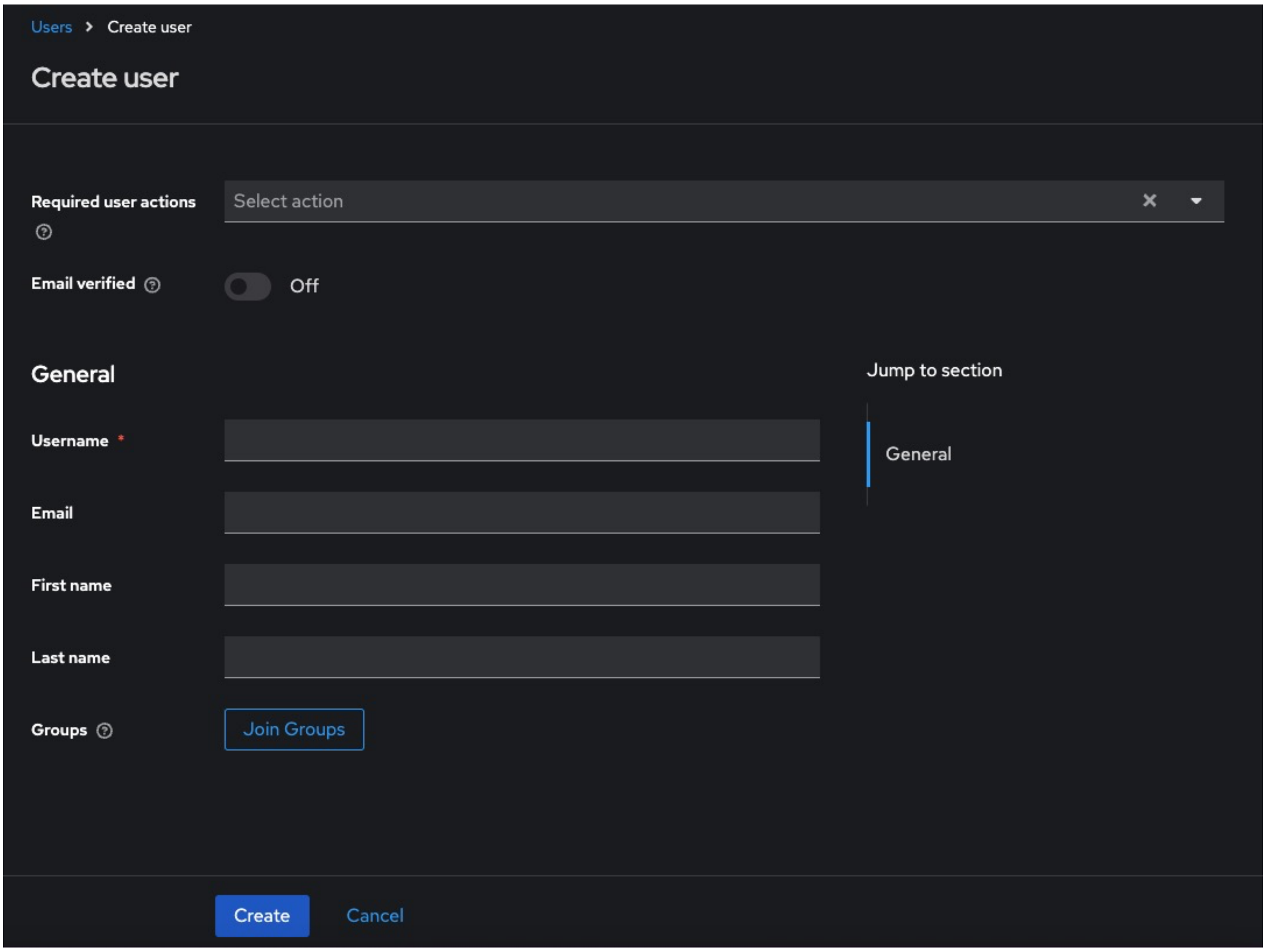
```
http://<your-keycloak-domain>/admin/
```

Choose the realm where you want to manage users.

Add a New User

1. Go to **Users > Add User**
2. Fill in the following:
   - **Username** (required)
   - **Email**, **First Name**, **Last Name** (optional but recommended)
   - Set **Email Verified** if applicable

3. Click **Create**



Set Credentials

After creating the user:

1. Go to the **Credentials** tab
2. Set a password
3. Toggle **Temporary** to OFF if you don't want the user to reset on first login
4. Click **Set Password**

Creating Users via Keycloak REST API

This method is suitable for CI/CD pipelines or automated scripts.

Get Access Token

```
curl -X POST "https://<keycloak-domain>/realms/master/protocol/openid-connect/token" \
  -H "Content-Type: application/x-www-form-urlencoded" \
  -d "username=admin" \
  -d "password=admin-password" \
  -d "grant_type=password" \
  -d "client_id=admin-cli"
```

Copy the access_token from the response.

Create User

```
curl -X POST "https://<keycloak-domain>/admin/realms/<realm>/users" \
  -H "Content-Type: application/json" \
  -H "Authorization: Bearer <access_token>" \
  -d '{
    "username": "johndoe",
    "email": "johndoe@example.com",
    "enabled": true,
    "emailVerified": true,
    "firstName": "John",
    "lastName": "Doe"
  }'
```

Set Password

```
curl -X PUT "https://<keycloak-domain>/admin/realms/<realm>/users/<user-id>/reset-password" \
  -H "Authorization: Bearer <access_token>" \
  -H "Content-Type: application/json" \
  -d '{
    "type": "password",
    "value": "StrongPassword123!",
    "temporary": false
  }'
```

To get <user-id>, call:

```
curl -H "Authorization: Bearer <access_token>" \
  https://<keycloak-domain>/admin/realms/<realm>/users?username=johndoe
```

Creating Users via Docker CLI

Step into the Container

```
docker exec -it keycloak bash
```

Use Admin CLI Script

```
/opt/keycloak/bin/kcadm.sh config credentials --server http://localhost:8080 \
  --realm master --user admin --password admin

/opt/keycloak/bin/kcadm.sh create users -r <realm> -s username=jane -s enabled=true
```

Set Password

```
/opt/keycloak/bin/kcadm.sh set-password -r <realm> --username jane --new-password
"SecurePass!123"
```

Required Permissions for User Management

- Requires manage-users role in the realm.
- Admin token used via CLI or REST must be scoped with user management privileges.

To assign permission via Admin Console:

```
Users > admin > Role Mappings > Realm Roles > Assign 'manage-users'
```

Best Practices for Managing Users

Use Verified Emails

Ensure emailVerified is set to true for pre-created users to skip email confirmation.

Avoid Temporary Passwords for API Imports

If scripting user creation, set temporary: false to avoid forcing password reset on first login.

Group Users by Role or Department

Organize users into **groups** (e.g., devs, sales, ops) for easier role management and policy application.

Monitor Login History

Enable event logging to track user login activity under **Events > Settings**.

Enforce Strong Passwords

Go to **Authentication > Password Policy** and configure rules like minimum length, digits, special chars, etc.

Common Issues and Troubleshooting

Issue	Possible Cause	Solution
409 Conflict: User exists	Username already taken	Use a unique username or search existing users
403 Forbidden on API	Missing permission or token scope	Ensure admin has manage-users in the correct realm
User not able to log in	Password not set or user is disabled	Check status under the user’s profile and verify credentials
Password reset fails	Temporary password not set correctly	Use "temporary": false if you want permanent password via API
Email not received for verification	SMTP not configured	Go to **Realm Settings > Email** and add SMTP server details

Creating and Configuring Clients in Keycloak

A **client** in Keycloak represents an application or service that uses Keycloak to authenticate users. Clients can be web apps, REST APIs, mobile apps, or even CLI tools. This guide explains how to create and configure clients through the Admin Console, REST API, and CLI (Docker), and also includes roles, best practices, and common troubleshooting steps.

Creating Clients via Keycloak Admin Console

This is the simplest way to register and configure a client visually.

Access the Admin Console

Log in to:

```
http://<your-keycloak-domain>/admin/
```

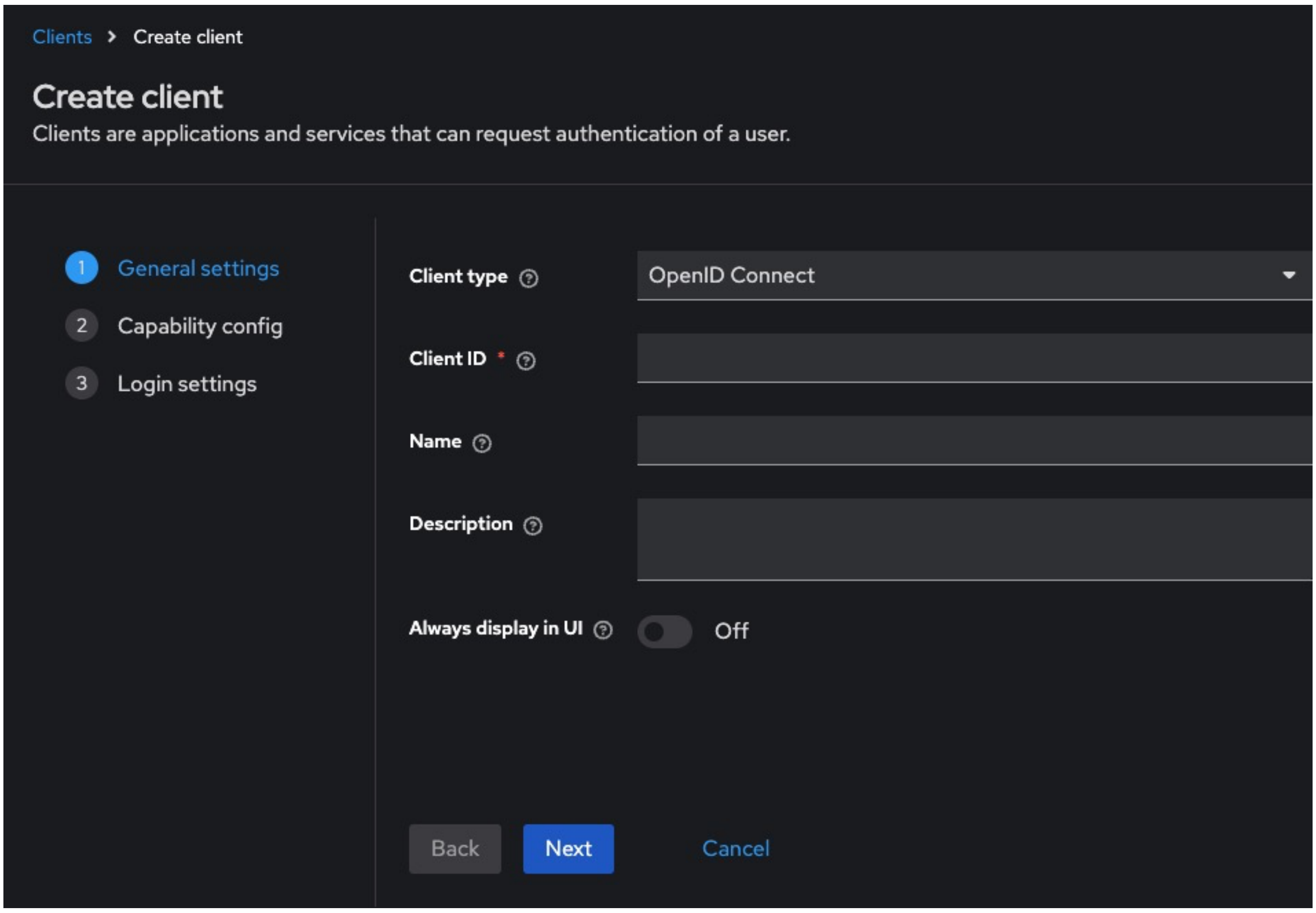
Choose the realm where the client should be added.

Add a New Client

1. Go to **Clients > Create**
2. Fill in the fields:

    - **Client ID**: A unique name, e.g., frontend-app or api-service
    - **Client Type**: Choose between OpenID Connect (default) or SAML
    - **Root URL**: The application base URL (e.g., http://localhost:3000)

3. Click **Next**, then **Save**



Configure Client Settings

- Go to the **Settings** tab for the client:
  - **Access Type**: Choose public, confidential, or bearer-only
  - **Valid Redirect URIs**: Add allowed redirect URLs (e.g., http://localhost:3000/*)
  - **Web Origins**: Add * or specific origins allowed to call this client
  - **Standard Flow Enabled**: Enable for browser-based login
  - **Direct Access Grants**: Enable if using password grant from API
- Save the changes

Creating Clients via Keycloak REST API

Get Access Token

```
curl -X POST "https://<keycloak-domain>/realms/master/protocol/openid-connect/token" \
  -H "Content-Type: application/x-www-form-urlencoded" \
  -d "username=admin" \
  -d "password=admin-password" \
  -d "grant_type=password" \
  -d "client_id=admin-cli"
```

Save the access_token.

Create a Client

```
curl -X POST "https://<keycloak-domain>/admin/realms/<realm>/clients" \
  -H "Authorization: Bearer <access_token>" \
  -H "Content-Type: application/json" \
  -d '{
    "clientId": "my-app",
    "enabled": true,
    "publicClient": false,
    "redirectUris": ["http://localhost:3000/*"],
    "webOrigins": ["http://localhost:3000"],
    "protocol": "openid-connect"
  }'
```

This creates a confidential client named my-app.

Creating Clients via Docker CLI

Step into the Container

```
docker exec -it keycloak bash
```

Authenticate and Create Client

```
/opt/keycloak/bin/kcadm.sh config credentials \
  --server http://localhost:8080 \
  --realm master --user admin --password admin

/opt/keycloak/bin/kcadm.sh create clients -r <realm> \
  -s clientId=my-cli-client \
  -s enabled=true \
  -s publicClient=false \
  -s redirectUris='["http://localhost:3000/*"]' \
    -s webOrigins='["http://localhost:3000"]'
```

Required Permissions for Client Management

- Requires manage-clients or admin role in the realm
- Token used via REST or CLI must be scoped to allow client creation

To grant roles via Admin Console:

```
Users > admin > Role Mappings > Realm Roles > Assign 'manage-clients'
```

Best Practices for Client Configuration

- **Use Confidential Clients for Backends:** Set publicClient = false and use client_secret for server-to-server communication.
- **Use Public Clients for SPAs:** Frontend apps using redirect flows should be marked as publicClient = true.
- **Set Narrow Redirect URIs:** Avoid using wildcards like * unless absolutely necessary. Use precise URIs for better security.
- **Limit Token Lifespans:** Go to **Realm Settings > Tokens** and configure access and refresh token lifetimes.
- **Rotate Client Secrets Regularly:** Manually rotate secrets or use automation for higher security compliance.
- **Use Roles and Mappers for RBAC:** Assign client roles and use **protocol mappers** to inject them into access tokens for authorization checks.

Common Issues and Troubleshooting

Issue	Possible Cause	Solution
Invalid redirect URI	Redirect URI doesn’t match registered value	Ensure exact match in **Valid Redirect URIs**
Client not visible after creation	UI or API delay	Refresh or re-login to see updated clients
Access token doesn’t include roles	Missing mappers	Add protocol mapper for client roles under **Client > Mappers**

Issue	Possible Cause	Solution
403 Forbidden when using client credentials	Client type is public or secret is wrong	Verify publicClient=false and check the client secret
Invalid client credentials error	Wrong client ID or secret	Verify spelling and match values from Admin Console

Setting Up Roles and Permissions in Keycloak

Roles and permissions in Keycloak define what users and applications are allowed to do. Roles can be assigned to users, groups, or clients, and are embedded into access tokens to enforce authorization. This guide explains how to define and manage roles via the Admin Console, REST API, and CLI, with best practices and common issues.

Creating Roles via Keycloak Admin Console

This is the easiest way to create and manage roles visually.

Access the Admin Console

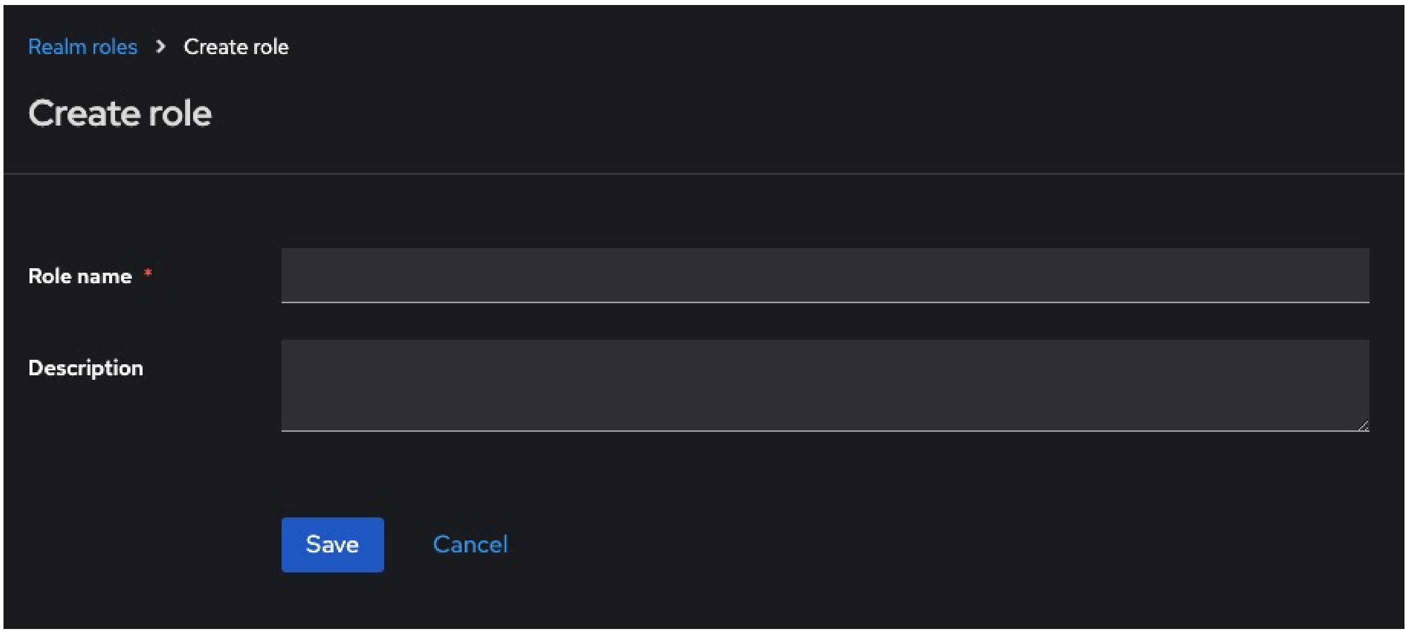
Log in to:

```
http://<your-keycloak-domain>/admin/
```

Choose the appropriate realm.

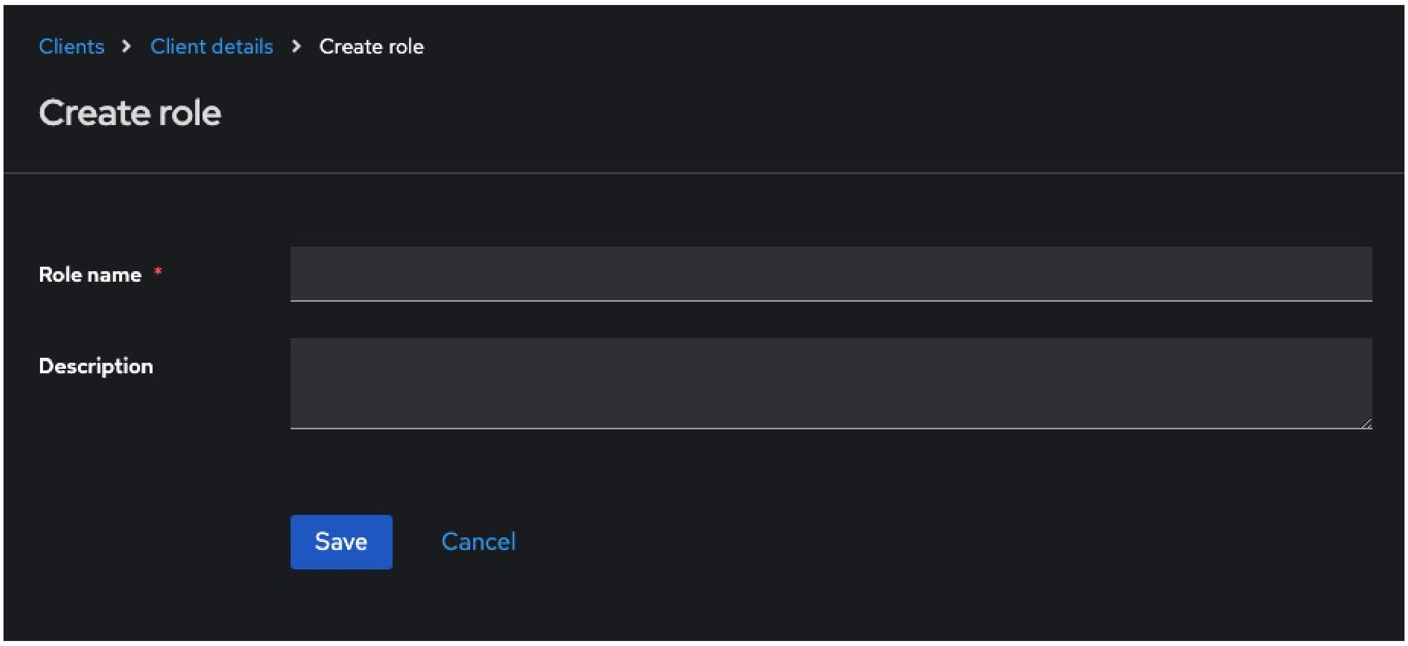
Create Realm Roles

1. Go to **Roles > Add Role**
2. Enter:
   - **Role Name**: e.g., admin, viewer, editor
   - **Description**: Optional but recommended
3. Click **Save**



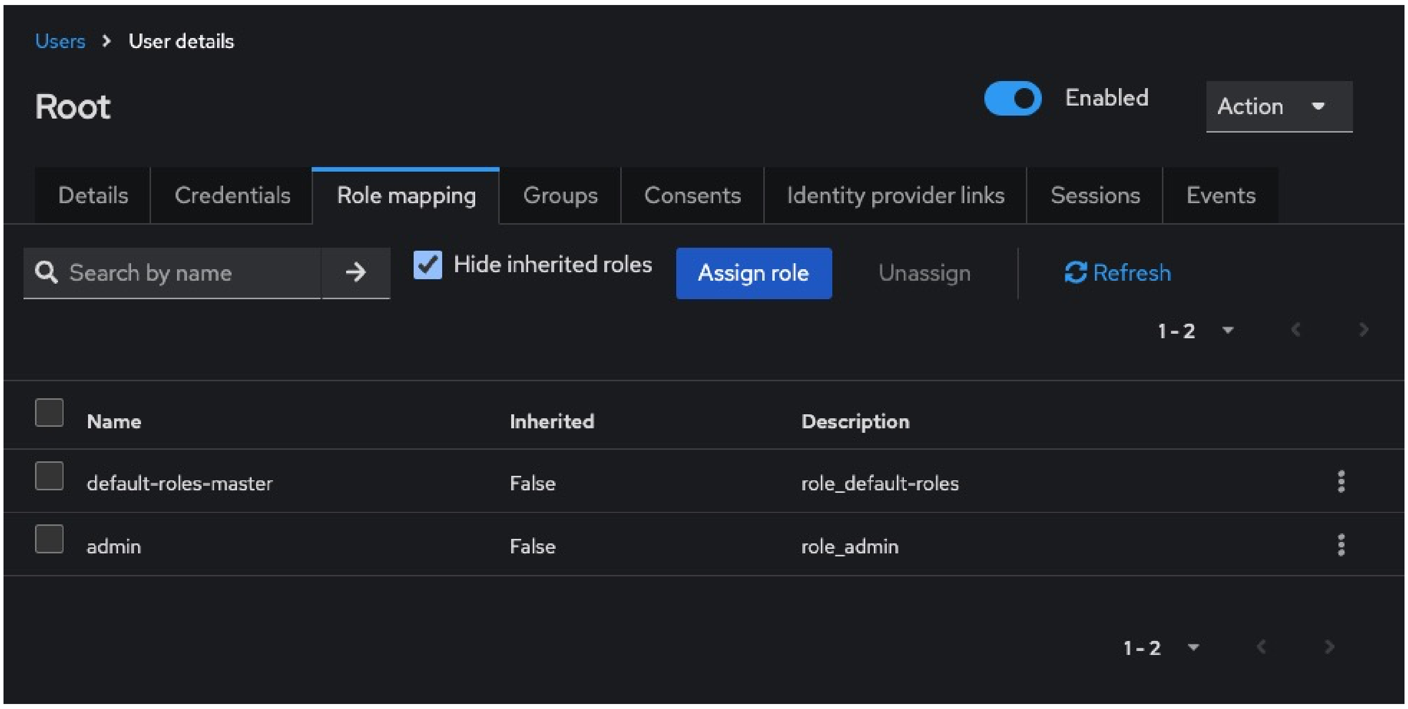
Create Client Roles

1. Go to **Clients > [client-name] > Roles > Create Role**
2. Fill in the **Role Name** and optional **Description**
3. Save the role



Assign Roles to Users

1. Go to **Users > [username] > Role Mappings**
2. In **Available Roles**, choose from:
   - Realm roles (top-left dropdown)
   - Client roles (select client under “Client Roles”)
3. Click **Add selected**



Name	Inherited	Description
default-roles-master	False	role_default-roles
admin	False	role_admin

Creating Roles via Keycloak REST API

Get Access Token

```
curl -X POST "https://<keycloak-domain>/realms/master/protocol/openid-connect/token" \
  -H "Content-Type: application/x-www-form-urlencoded" \
  -d "username=admin" \
  -d "password=admin-password" \
  -d "grant_type=password" \
  -d "client_id=admin-cli"
```

Save the access_token.

Create Realm Role

```
curl -X POST "https://<keycloak-domain>/admin/realms/<realm>/roles" \
  -H "Authorization: Bearer <access_token>" \
  -H "Content-Type: application/json" \
  -d '{
    "name": "viewer",
    "description": "Read-only access"
  }'
```

Create Client Role

```
curl -X POST "https://<keycloak-domain>/admin/realms/<realm>/clients/<client-id>/roles" \
  -H "Authorization: Bearer <access_token>" \
  -H "Content-Type: application/json" \
  -d '{
    "name": "api-user",
    "description": "API access for clients"
  }'
```

To get the client ID:

```
curl -H "Authorization: Bearer <access_token>" \
  "https://<keycloak-domain>/admin/realms/<realm>/clients"
```

Creating Roles via Docker CLI

Access the Container

```
docker exec -it keycloak bash
```

Create Roles via CLI

```
/opt/keycloak/bin/kcadm.sh config credentials \
  --server http://localhost:8080 --realm master \
  --user admin --password admin

/opt/keycloak/bin/kcadm.sh create roles -r <realm> \
  -s name=auditor -s description="Can view reports"
```

To create client roles:

```
/opt/keycloak/bin/kcadm.sh create clients/<client-id>/roles -r <realm> \
  -s name=external-api -s description="Role for external apps"
```

Required Permissions for Managing Roles

To manage roles, users need:

- manage-realm role for realm roles
- manage-clients role for client-specific roles

To assign via Admin Console:

```
Users > [admin-user] > Role Mappings > Realm Roles > Add 'manage-realm' or 'manage-clients'
```

Best Practices for Roles and Permissions

- **Use Fine-Grained Role Names:** Use names like invoice_viewer, invoice_editor, or admin_dashboard for clarity.
- **Use Groups to Assign Roles in Bulk:** Create groups such as managers, sales, or auditors, then assign roles to groups.
- **Map Roles to Access Tokens:** Use **Client > Mappers** to include role names in the access_token or id_token.
- **Prefer Client Roles for Application Permissions:** Client roles are scoped to individual apps and help separate responsibilities.
- **Use Composite Roles Sparingly:** Composite roles combine multiple roles into one but may add complexity if overused.

Common Issues and Troubleshooting

Issue	Possible Cause	Solution
Role doesn’t appear in token	Missing protocol mapper	Add a role mapper in **Client > Mappers**
User not authorized despite role assignment	Role not assigned to the correct client/realm	Verify if the role is client-scoped or realm-wide
403 Forbidden despite valid login	Role not embedded in access token	Ensure token includes required roles via protocol mappers
REST API: 409 Conflict when creating role	Role with same name already exists	Use a unique name or update existing role
Cannot assign role to user	User lacks manage-users privilege	Ensure admin has role assignment rights

Enabling Identity Federation in Keycloak

Identity federation allows you to delegate authentication to external identity providers (IdPs) like Google, GitHub, Facebook, or enterprise systems such as LDAP and Active Directory. This guide explains how to integrate identity providers using the Keycloak Admin Console, REST API, and Docker CLI (kcadm.sh). It includes configuration examples, permission requirements, best practices, and common issues.

Adding Identity Providers via Keycloak Admin Console

This method supports most popular providers like Google, GitHub, Facebook, and SAML/LDAP.

Access the Admin Console

Log in to your Keycloak Admin Console:

```
http://<your-keycloak-domain>/admin/
```

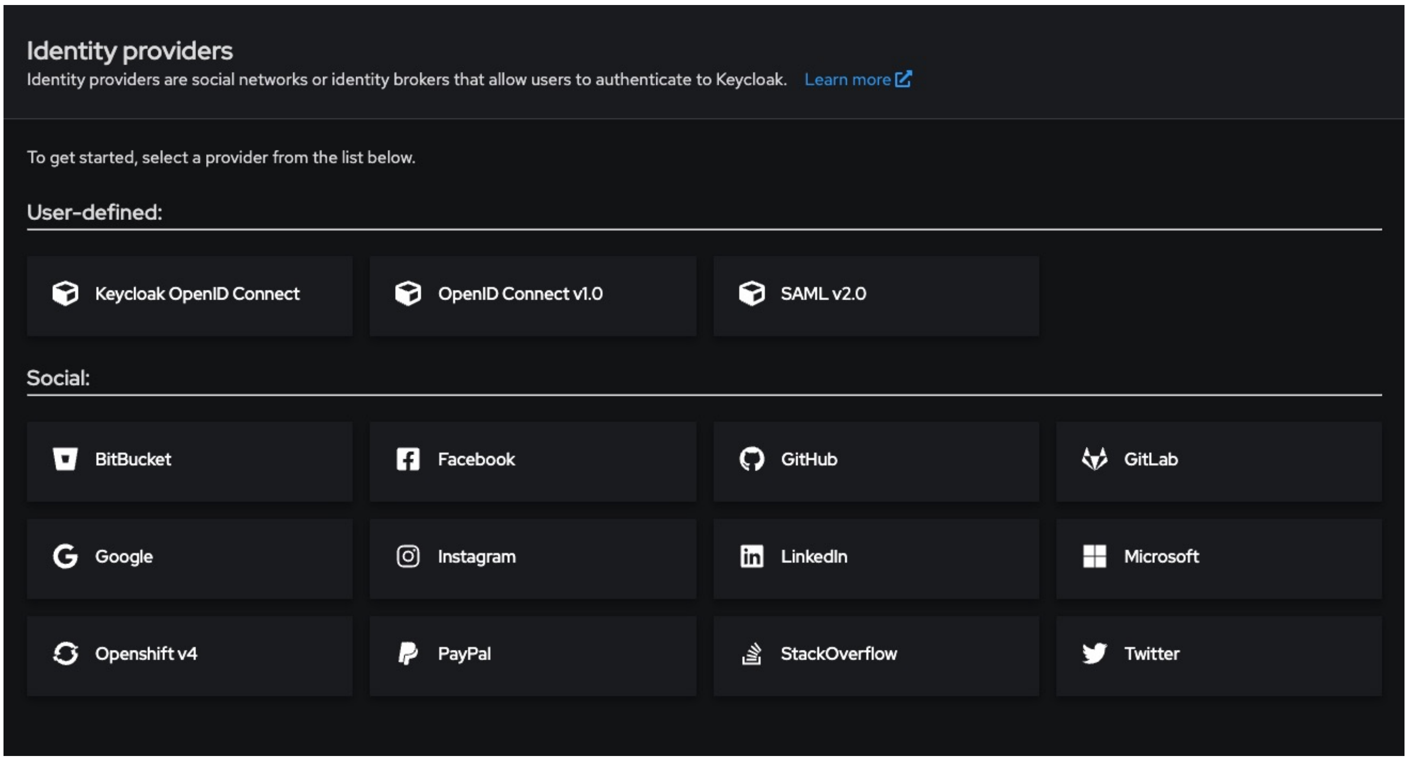
Select the realm where you want to add the identity provider.

Add an Identity Provider (OIDC-based)

1. Go to **Identity Providers > Add Provider**
2. Choose an option like Google, GitHub, or OpenID Connect v1.0
3. Fill in the following:

    - **Alias**: A unique name like google or github
    - **Client ID**: From the external IdP
    - **Client Secret**: From the external IdP
    - **Authorization URL**, **Token URL**, **User Info URL**: Auto-filled for well-known providers

4. Set **Sync Mode** (e.g., IMPORT, FORCE, or LEGACY)
5. Enable **Store Tokens** if you want offline access
6. Click **Save**


Identity providers

Identity providers are social networks or identity brokers that allow users to authenticate to Keycloak. Learn more

To get started, select a provider from the list below.

User-defined:

Social:

Test the Identity Provider

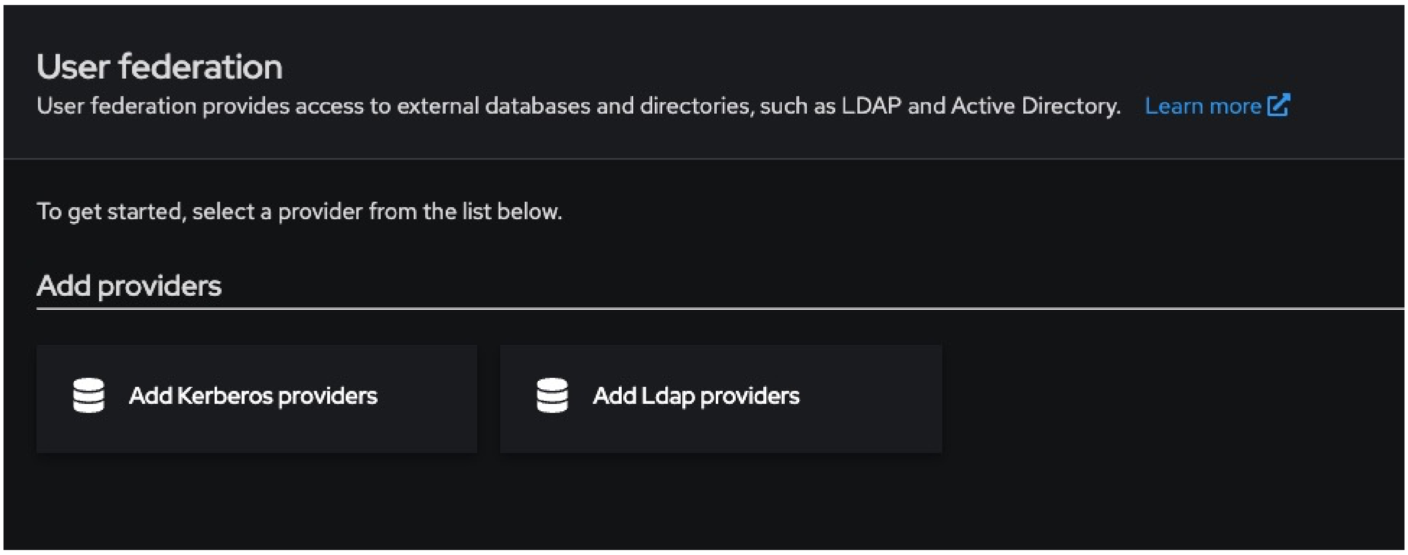
1. Go to the realm login page
2. You'll now see a **"Login with Google"** or equivalent option

Adding LDAP or Active Directory

1. Go to **User Federation > Add Provider → LDAP**
2. Fill in connection details:

Field	Example
Connection URL	ldap://ldap.mycompany.com
Users DN	ou=users,dc=mycompany,dc=com
Bind DN	cn=admin,dc=mycompany,dc=com
Bind Credential	Your LDAP password
Vendor	Active Directory, Other, etc.

2. Choose **Edit Mode**: READ_ONLY, WRITABLE, or UNSYNCED
3. Enable **Periodic Sync** if needed
4. Save and test the connection


User federation

User federation provides access to external databases and directories, such as LDAP and Active Directory. Learn more

To get started, select a provider from the list below.

Add providers

Adding Identity Providers via REST API

Get Access Token

```
curl -X POST "https://<keycloak-domain>/realms/master/protocol/openid-connect/token" \
  -H "Content-Type: application/x-www-form-urlencoded" \
  -d "username=admin" \
  -d "password=admin-password" \
  -d "grant_type=password" \
  -d "client_id=admin-cli"
```

Save the access_token.

Add OIDC Identity Provider

```
curl -X POST "https://<keycloak-domain>/admin/realms/<realm>/identity-provider/instances" \
  -H "Authorization: Bearer <access_token>" \
  -H "Content-Type: application/json" \
  -d '{
    "alias": "google",
    "providerId": "google",
    "enabled": true,
    "trustEmail": true,
    "storeToken": false,
    "addReadTokenRoleOnCreate": false,
    "firstBrokerLoginFlowAlias": "first broker login",
    "config": {
      "clientId": "GOOGLE_CLIENT_ID",
      "clientSecret": "GOOGLE_CLIENT_SECRET"
    }
  }'
```

Adding Identity Providers via Docker CLI

Access the Container

```
docker exec -it keycloak bash
```

Add Provider

```
/opt/keycloak/bin/kcadm.sh config credentials \
  --server http://localhost:8080 \
  --realm master --user admin --password admin

/opt/keycloak/bin/kcadm.sh create identity-provider/instances -r <realm> \
  -s alias=github -s providerId=github \
  -s enabled=true \
  -s config.clientId=GITHUB_CLIENT_ID \
  -s config.clientSecret=GITHUB_CLIENT_SECRET
```

Required Permissions for Identity Federation

- Requires manage-identity-providers or admin role in the target realm
- REST tokens must come from a user with these privileges

To assign via Admin Console:

```
Users > [admin-user] > Role Mappings > Realm Roles > Add 'manage-identity-providers'
```

Best Practices for Identity Federation

- **Use Standard Broker Flows:** Leverage **First Broker Login** flow to prompt for email verification or account linking.
- **Map External Claims to Roles:** Use **Identity Provider Mappers** to assign roles or sync attributes (like email, groups, org) automatically.
- **Avoid Using Public Client IDs in Backend:** Always use confidential clients when configuring from the backend or REST API.
- **Enable Logging During Setup:** Use Keycloak’s **Events > Settings** to track login attempts and errors for debugging.
- **Test With Separate Test Realm First:** Validate your configuration in a dev/test realm before enabling in production.

Common Issues and Troubleshooting

Issue	Possible Cause	Solution
Login button not showing on login page	Provider not enabled	Ensure enabled=true and alias is correct
Invalid client_id error	Client ID mismatch	Verify credentials from the IdP provider dashboard
User not found after login	No email or username claim returned	Check mappers and ensure email or preferred_username is mapped
LDAP users not visible in UI	Wrong base DN or invalid bind credentials	Test connection under **User Federation** settings
403 Forbidden on REST call	Missing role or token scope	Ensure token has manage-identity-providers

Enabling Two-Factor Authentication (2FA) in Keycloak

Two-Factor Authentication (2FA) adds an extra layer of security to user logins by requiring something the user knows (password) and something they have (typically an OTP via a mobile app). This guide explains how to enable and enforce OTP-based 2FA for all or specific users in Keycloak, using the Admin Console, authentication flows, and best practices.

Enabling 2FA via the Admin Console

Log in to the Admin Console

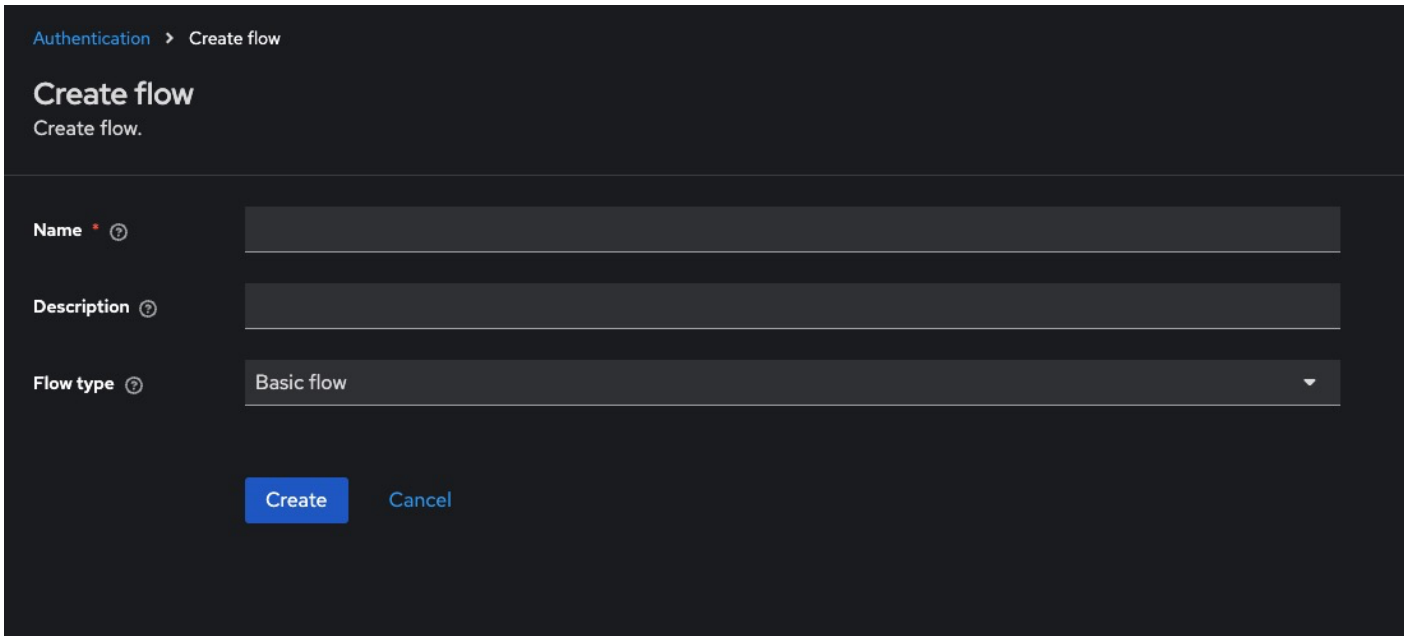
Navigate to:

```
http://<your-keycloak-domain>/admin/
```

Choose the realm where you want to enable 2FA.

Enable OTP in Authentication Flow

1. Go to **Authentication > Flows**
2. Select the **Browser** flow (or copy it if you want a custom flow)
3. Locate the **Browser** execution list:
   - Ensure that **OTP Form** is listed and set to **REQUIRED**
   - If it’s not listed:
     - Click **Add Execution**
     - Choose **OTP Form**, then set its requirement to **REQUIRED**
4. Click **Save**



Create flow

Create flow.

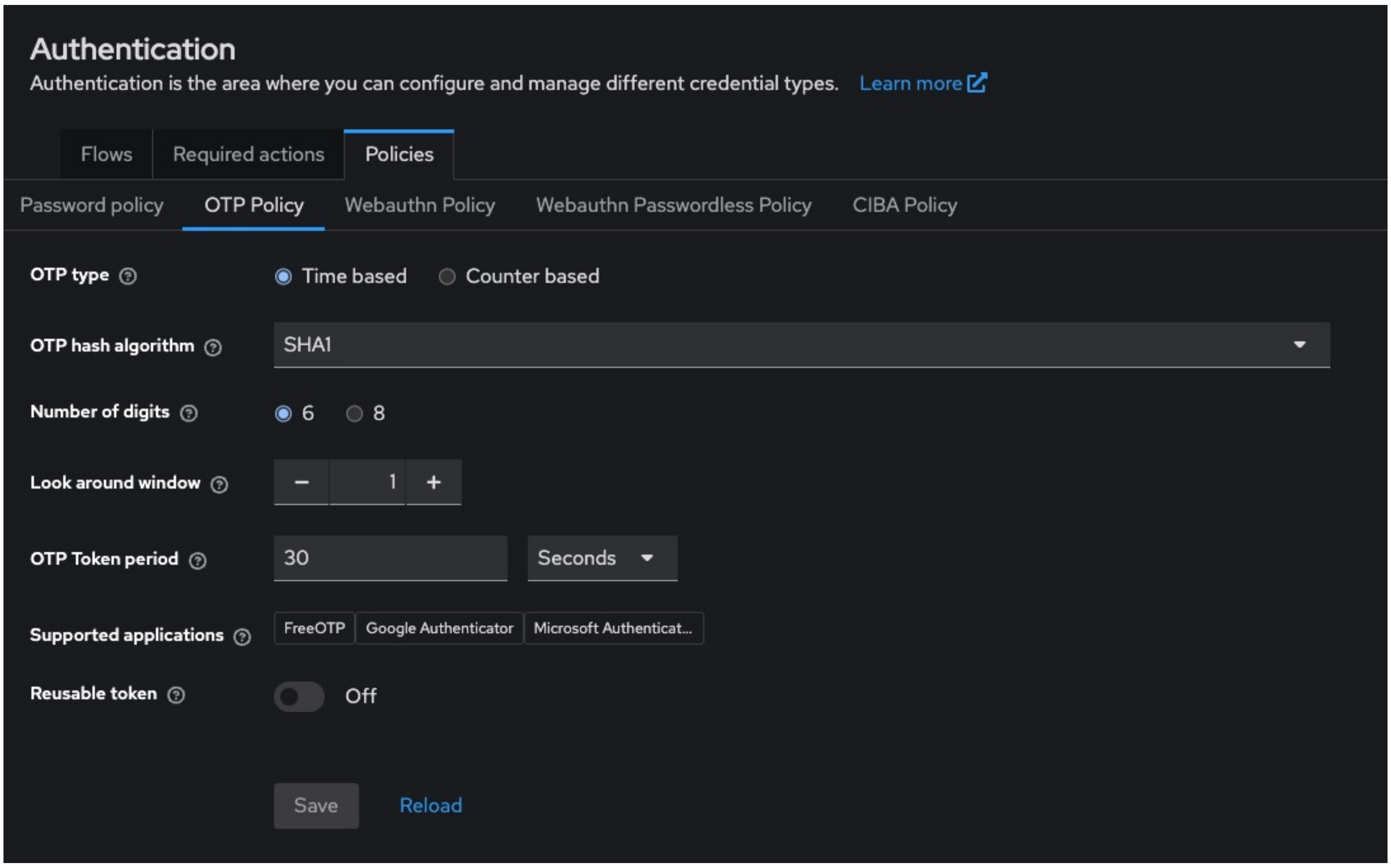
Name *	
Description	
Flow type	Basic flow

Configure OTP Policy

Go to **Realm Settings > OTP** and configure:

- **OTP Type**: TOTP (time-based, most common)
- **Period**: 30 seconds (default)
- **Digits**: 6
- **Algorithm**: SHA1
- **Look Ahead Window**: 1 or 2

Click **Save**


Authentication
Authentication is the area where you can configure and manage different credential types. Learn more
Flows
Required actions
Policies
Password policy
OTP Policy
Webauthn Policy
Webauthn Passwordless Policy
CIBA Policy
Save
Reload

OTP type: [✓ Time based] Counter based

OTP hash algorithm: SHA1

Number of digits: [✓ 6] 8

Look around window: 1

OTP Token period: 30 Seconds

Supported applications: FreeOTP, Google Authenticator, Microsoft Authenticat...

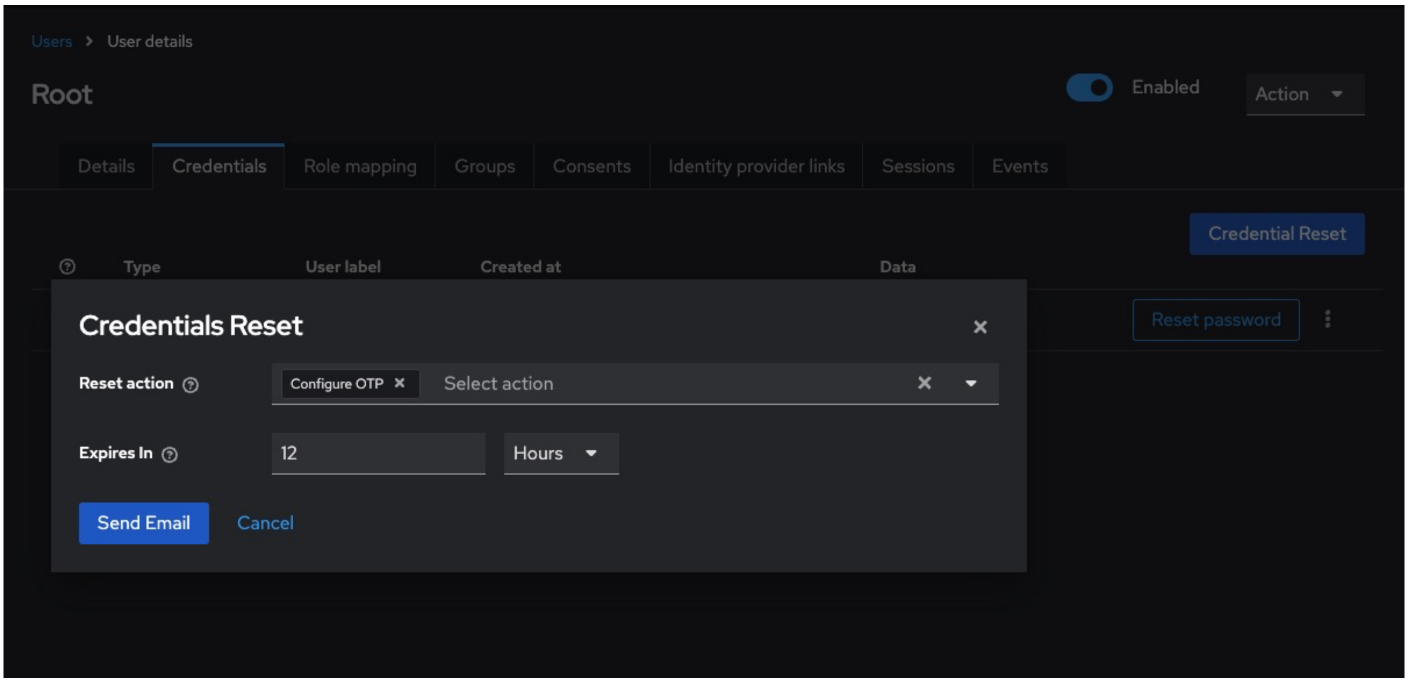
Reusable token: Off

Enforcing 2FA for Specific Users

2FA is optional by default. To make it required for a specific user:

1. Go to **Users > [username]**
2. Open the **Credentials** tab
3. Click **Set Up Required Action**
4. Choose **Configure OTP** from the dropdown
5. Click **Save**

The user will be prompted to set up 2FA on their next login.



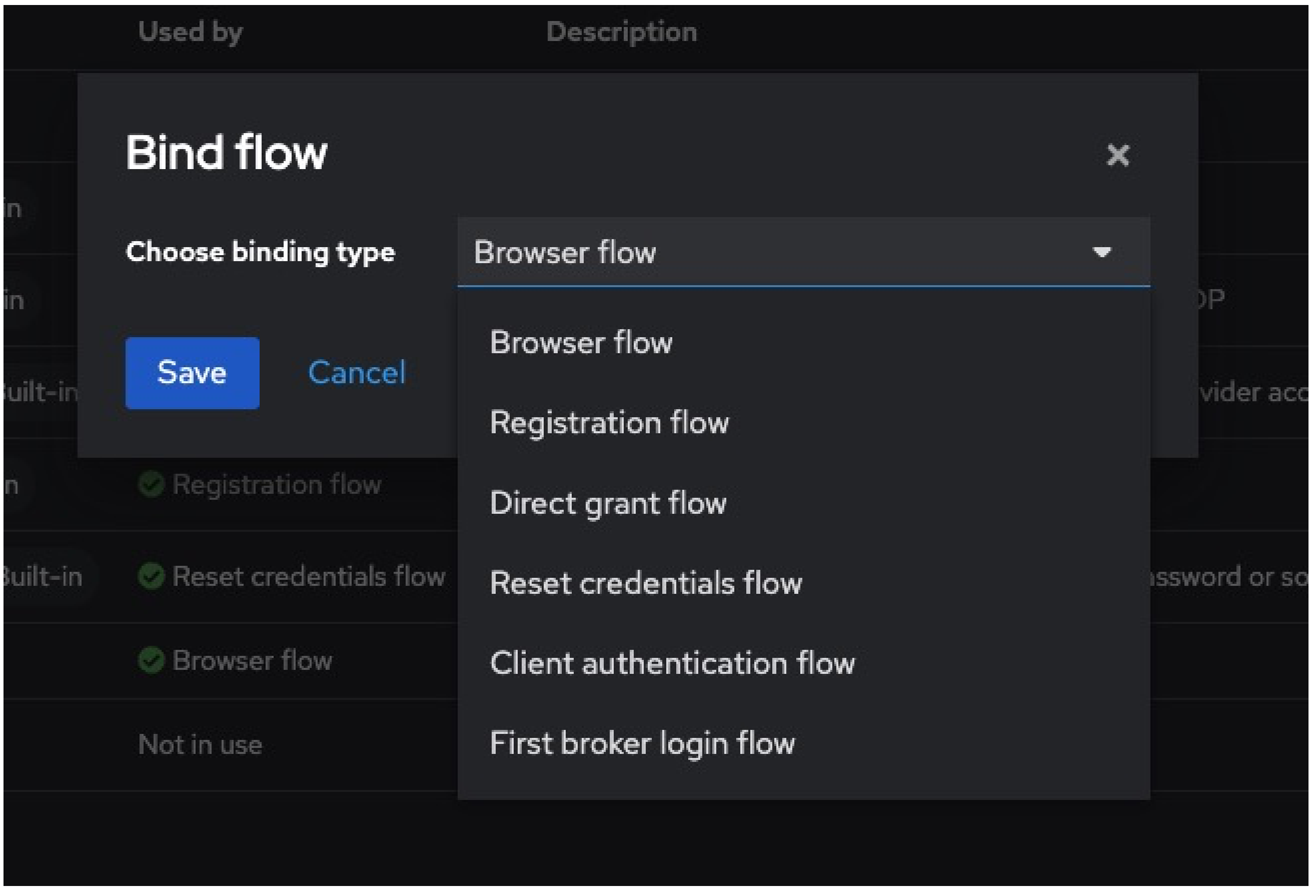
Reset action: Configure OTP

Expires In: 12 Hours

Enforcing 2FA for All Users

To enforce 2FA globally:

1. Go to **Authentication > Bindings**
2. Set **Browser Flow** to a flow where **OTP Form** is REQUIRED
3. All users will be required to configure 2FA on their next login if not already done



Enabling 2FA via REST API

Get Admin Access Token

```
curl -X POST "https://<keycloak-domain>/realms/master/protocol/openid-connect/token" \
  -H "Content-Type: application/x-www-form-urlencoded" \
  -d "username=admin" \
  -d "password=admin-password" \
  -d "grant_type=password" \
  -d "client_id=admin-cli"
```

Assign "Configure OTP" Required Action to a User

```
curl -X PUT "https://<keycloak-domain>/admin/realms/<realm>/users/<user-id>" \
  -H "Authorization: Bearer <access_token>" \
  -H "Content-Type: application/json" \
  -d '{"requiredActions": ["CONFIGURE_TOTP"]}'
```

To get the user ID:

```
curl -H "Authorization: Bearer <access_token>" \
  https://<keycloak-domain>/admin/realms/<realm>/users?username=<username>
```

Enabling 2FA via Docker CLI

Authenticate and Set OTP Action

```
docker exec -it keycloak bash

/opt/keycloak/bin/kcadm.sh config credentials \
  --server http://localhost:8080 \
  --realm master --user admin --password admin

/opt/keycloak/bin/kcadm.sh update users/<user-id> -r <realm> \
  -s 'requiredActions=["CONFIGURE_TOTP"]'
```

Required Permissions for 2FA Management

- Requires manage-users role
- REST API calls must use a token with manage-users permission in the realm

To assign via Admin Console:

```
Users > [admin-user] > Role Mappings > Realm Roles > Add 'manage-users'
```

Best Practices for 2FA

- **Use Time-Based OTP (TOTP):** TOTP is compatible with standard apps like Google Authenticator, Authy, or FreeOTP.
- **Customize OTP Setup Page:** Modify the otp.ftl page inside your theme to reflect your brand and offer setup instructions.
- **Inform Users Before Enforcing:** Enable OTP as a required action with communication ahead of rollout to avoid login issues.
- **Use Conditional 2FA Flows:** Use **conditional executions** (e.g., only require OTP from outside a trusted network/IP range).

- **Back Up OTP Configuration:** Encourage users to back up their OTP seed or enable recovery codes for critical accounts.

Common Issues and Troubleshooting

Issue	Possible Cause	Solution
Users not prompted for 2FA	OTP Form not set to REQUIRED in flow	Set requirement to REQUIRED in the Browser flow
OTP setup skips	Configure OTP not added as required action	Manually assign it to users or enforce via default flow
“Invalid TOTP” error on login	Wrong time sync or wrong app	Ensure mobile device clock is correct and app supports TOTP
OTP works once then fails	Look-ahead window too small	Increase look-ahead window under Realm Settings > OTP
No OTP page shown after password	Flow misconfigured	Review order and requirement levels of all executions in the flow

Resetting User Passwords in KeycloakNew Page

Password resets are a critical part of account lifecycle management. Keycloak provides multiple secure methods for resetting a user's password manually through the Admin Console, programmatically via REST API, or via user self-service workflows using email links. This guide walks through all these approaches, including configuration steps, best practices, and common issues.

Resetting Password via Admin Console

This is the most direct method for administrators to reset passwords.

Access the Admin Console

Log in to:

```
http://<your-keycloak-domain>/admin/
```

Select the desired realm.

Reset a User's Password

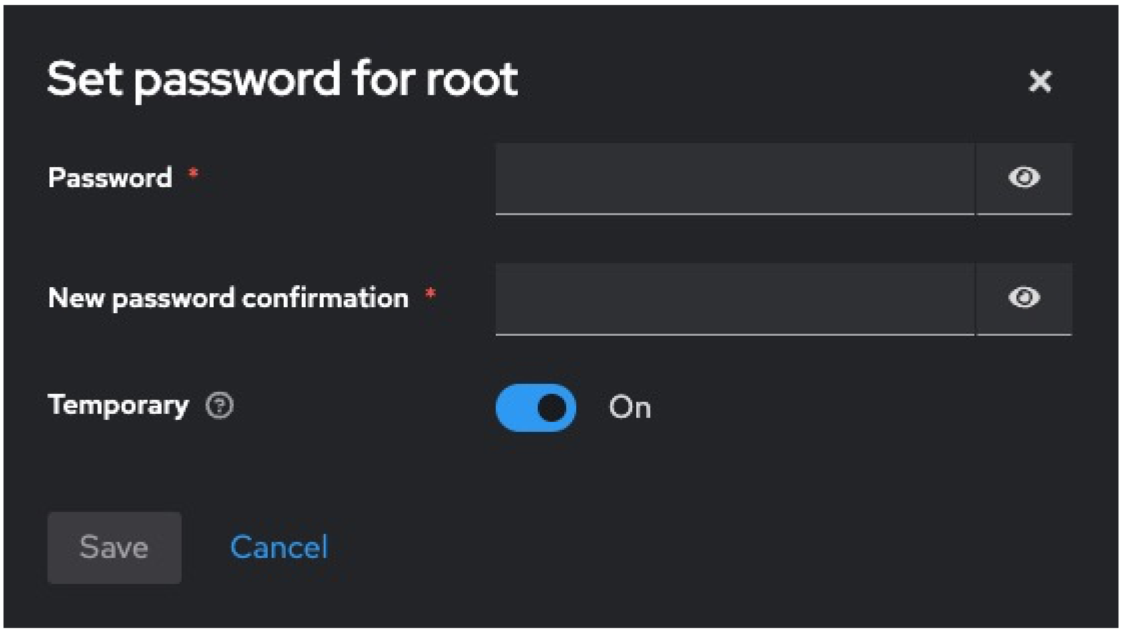
1. Go to **Users > [username] > Credentials**
2. Under **Set Password**:

    - Enter a new password
    - Confirm it
    - Toggle **Temporary**:

        - **ON** = user will be forced to change it on next login
        - **OFF** = permanent change

3. Click **Set Password**

The new password takes effect immediately.



Temporary: On

Resetting Password via REST API

Get Admin Access Token

```
curl -X POST "https://<keycloak-domain>/realms/master/protocol/openid-connect/token" \
  -H "Content-Type: application/x-www-form-urlencoded" \
  -d "username=admin" \
  -d "password=admin-password" \
  -d "grant_type=password" \
  -d "client_id=admin-cli"
```

Set New Password for a User

```
curl -X PUT "https://<keycloak-domain>/admin/realms/<realm>/users/<user-id>/reset-password" \
  -H "Authorization: Bearer <access_token>" \
  -H "Content-Type: application/json" \
  -d '{
    "type": "password",
    "value": "SecurePassword123!",
    "temporary": false
  }'
```

To get <user-id>:

```
curl -H "Authorization: Bearer <access_token>" \
  https://<keycloak-domain>/admin/realms/<realm>/users?username=<username>
```

Resetting Password via Docker CLI

Inside the Container

```
docker exec -it keycloak bash
```

Reset User Password

```
/opt/keycloak/bin/kcadm.sh config credentials \
  --server http://localhost:8080 \
  --realm master --user admin --password admin

/opt/keycloak/bin/kcadm.sh set-password -r <realm> \
  --username <username> --new-password "SecurePassword123!" --temporary=false
```

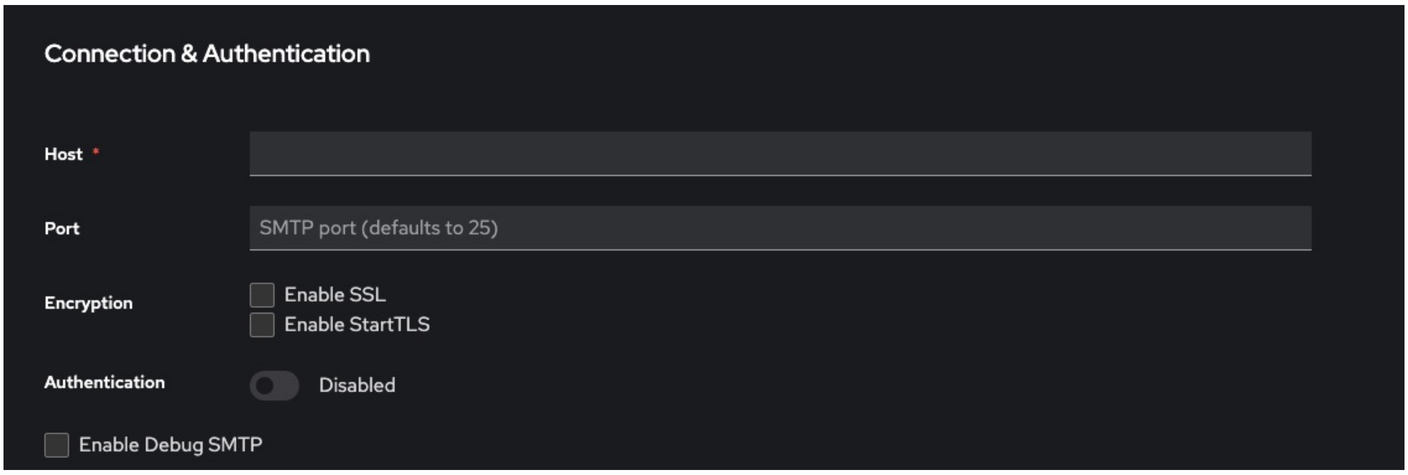
Resetting Password via Email (Self-Service)

Configure SMTP

1. Go to **Realm Settings > Email**
2. Enter your SMTP configuration:

    - Host
    - Port
    - From address
    - Username/password

3. Click **Test Connection**
4. Click **Save**



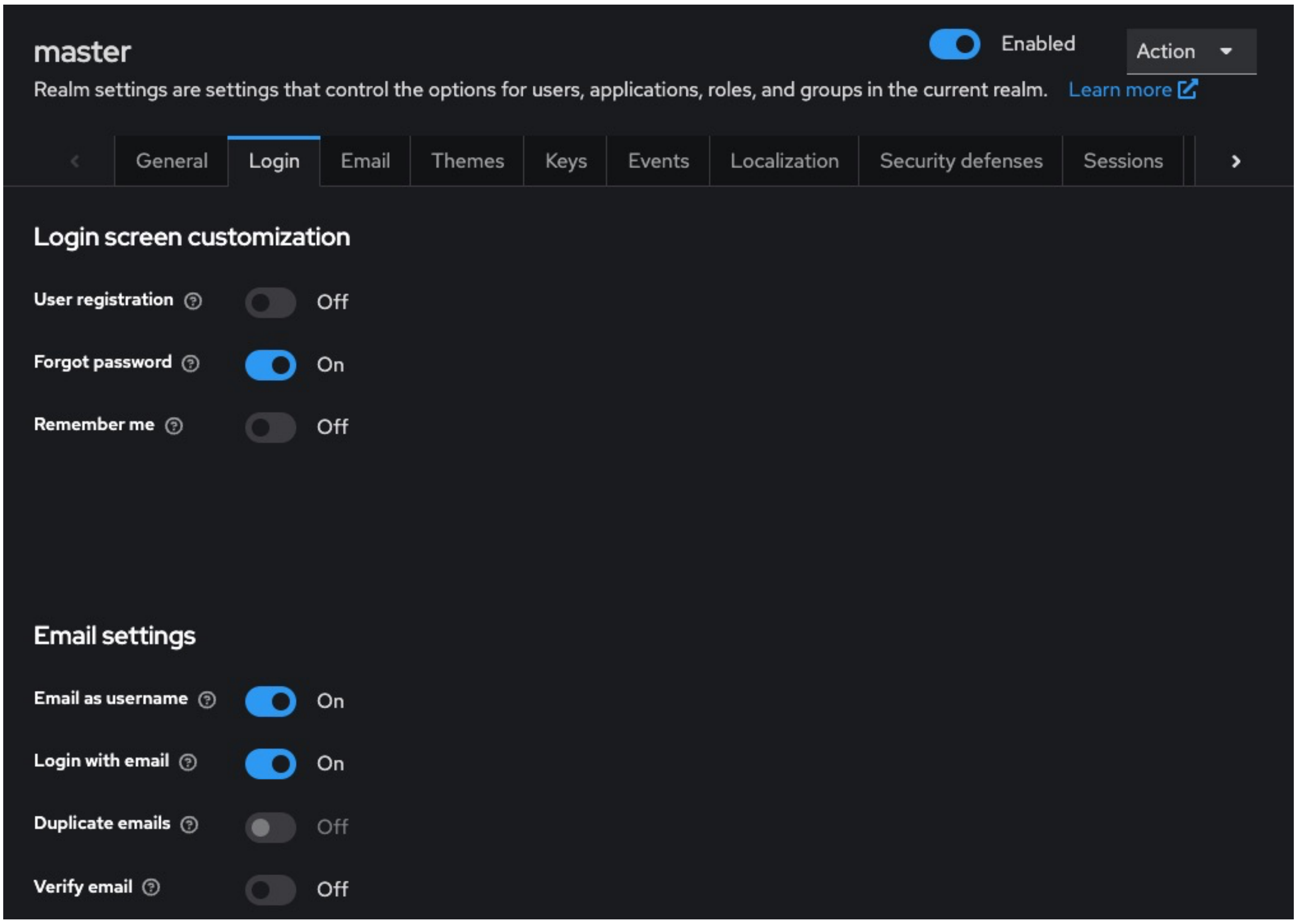
Connection & Authentication

Host *	
Port	SMTP port (defaults to 25)
Encryption	☐ Enable SSL ☐ Enable StartTLS
Authentication	Disabled

☐ Enable Debug SMTP

Enable “Forgot Password” Option

1. Go to **Authentication > Flows > Browser**
2. Ensure **Reset Credentials** subflow is present
3. Under **Realm Settings > Login**, enable:
   - **Forgot Password**
   - **Email as Username** (optional)


master
Enabled
Action
Realm settings are settings that control the options for users, applications, roles, and groups in the current realm. Learn more
General
Login
Email
Themes
Keys
Events
Localization
Security defenses
Sessions

Login screen customization

User registration	Off
Forgot password	On
Remember me	Off

Email settings

Email as username	On
Login with email	On
Duplicate emails	Off
Verify email	Off

Trigger Reset Link (User Side)

Users can go to the login page, click **Forgot Password**, and receive a reset link via email.

Required Permissions

- Admin Console: Must have manage-users role
- REST API: Token must have manage-users in the target realm

To assign via Admin Console:

```
Users > [admin-user] > Role Mappings > Realm Roles > Add 'manage-users'
```

Best Practices for Password Resets

- **Always Use Temporary Passwords for Manual Resets:** For admin-initiated resets, mark passwords as temporary to enforce user re-entry.
- **Secure SMTP Configuration:** Always use TLS/SSL for SMTP and avoid using free/public SMTP providers in production.
- **Limit Password Reset Frequency:** Use brute-force protection under **Realm Settings > Security Defenses > Brute Force Detection**.
- **Log and Audit Password Resets:** Enable **Events > Settings** to log password reset events and maintain an audit trail.
- **Inform Users of Security Practices:** Add disclaimers to reset emails and verify request intent using short-lived links.

Common Issues and Troubleshooting

Issue	Possible Cause	Solution
Password reset link not received	SMTP not configured or invalid	Set up SMTP under Realm Settings > Email
Reset link expired	Time limit exceeded	Increase **Reset Link Lifespan** under Realm Settings > Tokens
User not prompted to change password	Password not marked as temporary	Enable temporary: true or configure as required action
REST API returns 403 Forbidden	Missing permissions	Ensure admin token has manage-users role
User not found error	Wrong realm or username	Confirm realm and check Users > View all users