ADMIN CONSOLE > LOGIN WITH SSO >

Keycloak SAML Implementation

View in the help center:
https://bitwarden.com/help/saml-keycloak/

Keycloak SAML Implementation

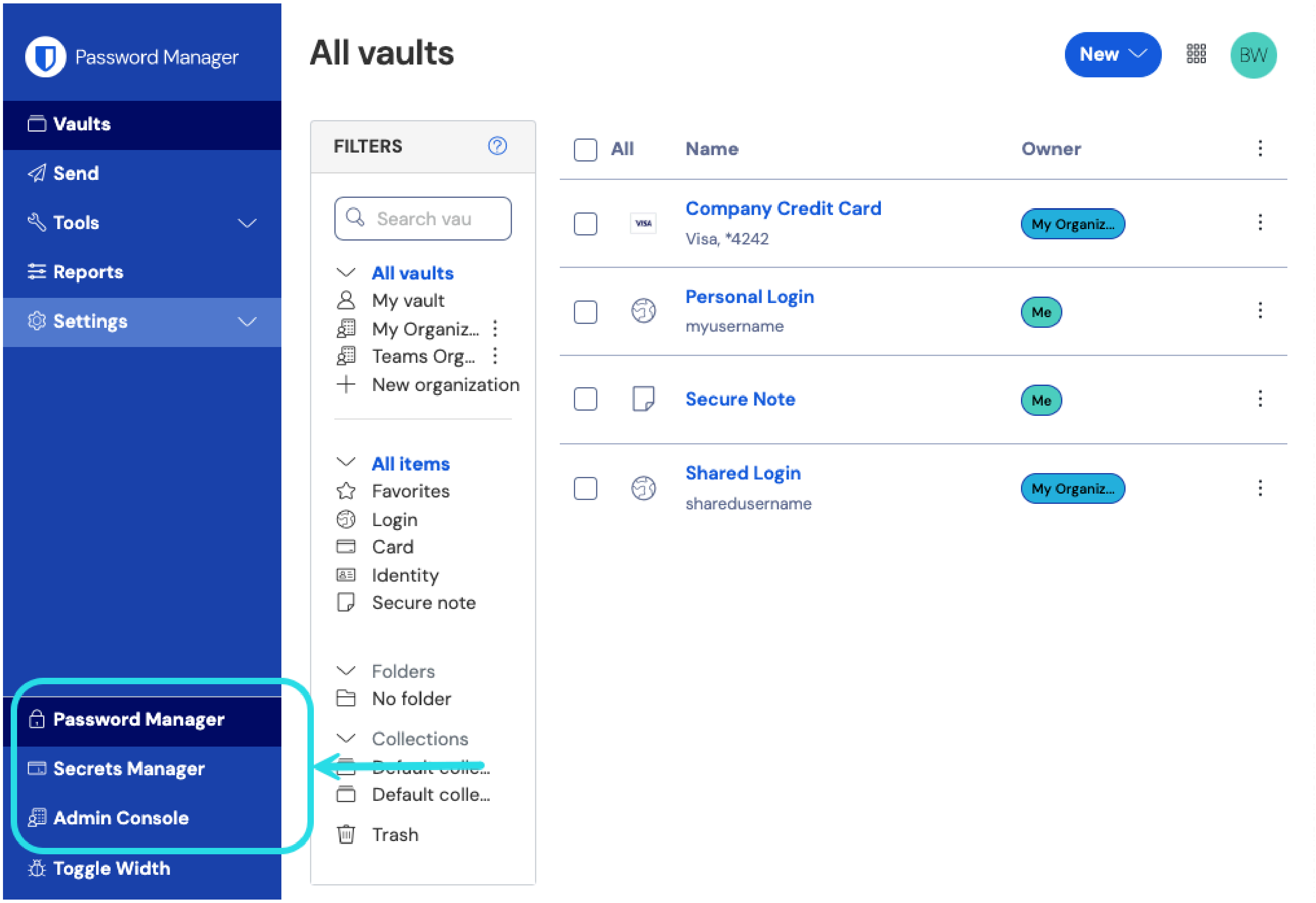
This article contains **Keycloak-specific** help for configuring login with SSO via SAML 2.0. For help configuring login with SSO for another IdP, refer to SAML 2.0 Configuration.

Configuration involves working simultaneously with the Bitwarden web app and the Keycloak Portal. As you proceed, we recommend having both readily available and completing steps in the order they are documented.

> **Tip**
>
> **Already an SSO expert?** Skip the instructions in this article and download screenshots of sample configurations to compare against your own.
>
> Download Sample

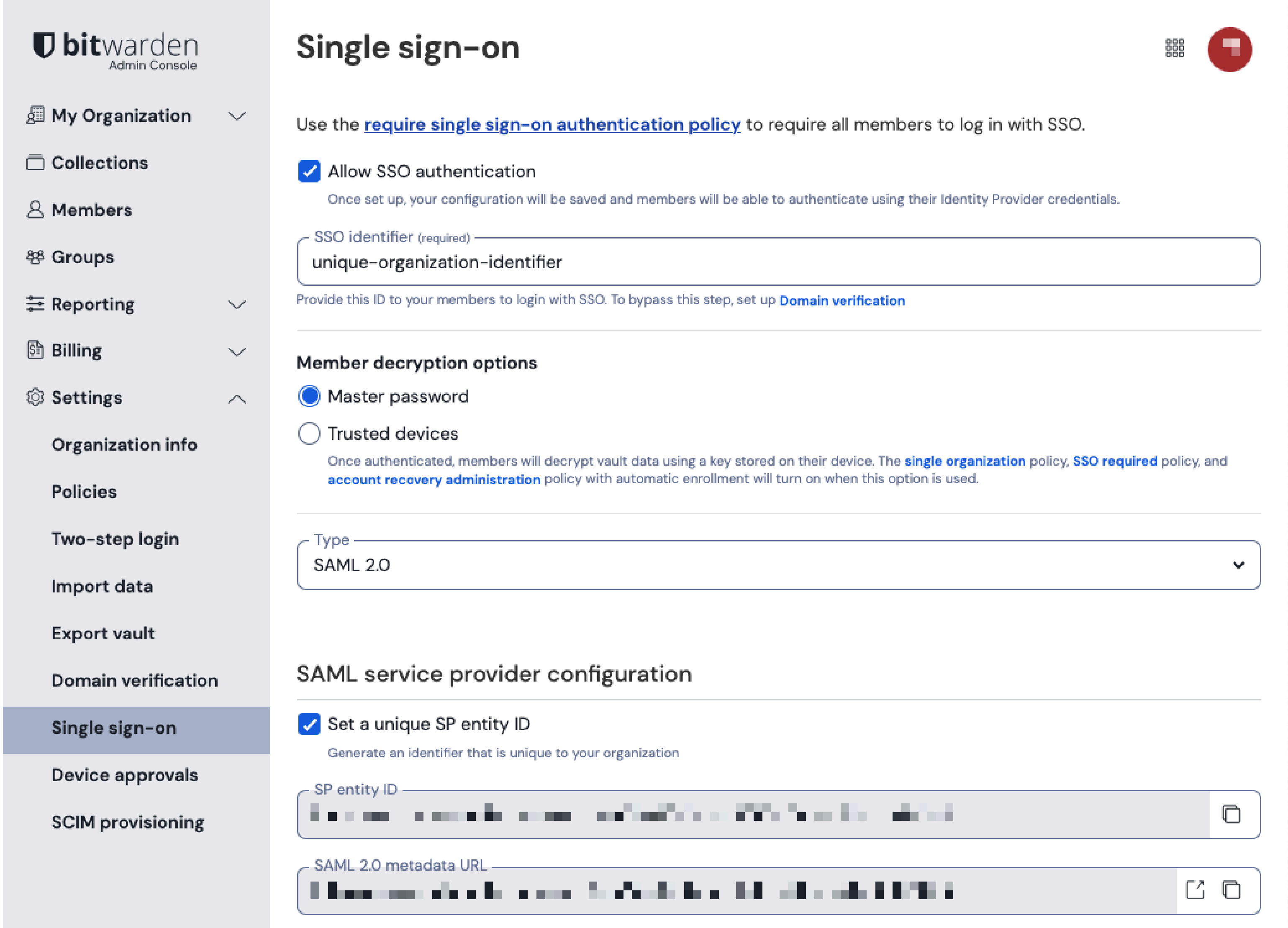
Open SSO in the web app

Log in to the Bitwarden web app and open the Admin Console using the product switcher:



Product switcher

Open your organization's **Settings** → **Single sign-on** screen:



Single sign-on

Use the require single sign-on authentication policy to require all members to log in with SSO.

☑ Allow SSO authentication

Once set up, your configuration will be saved and members will be able to authenticate using their Identity Provider credentials.

SSO identifier (required): unique-organization-identifier

Provide this ID to your members to login with SSO. To bypass this step, set up Domain verification

Member decryption options

● Master password

○ Trusted devices

Once authenticated, members will decrypt vault data using a key stored on their device. The single organization policy, SSO required policy, and account recovery administration policy with automatic enrollment will turn on when this option is used.

Type: SAML 2.0

SAML service provider configuration

☑ Set a unique SP entity ID

Generate an identifier that is unique to your organization

SP entity ID: [redacted]

SAML 2.0 metadata URL: [redacted]

SAML 2.0 configuration

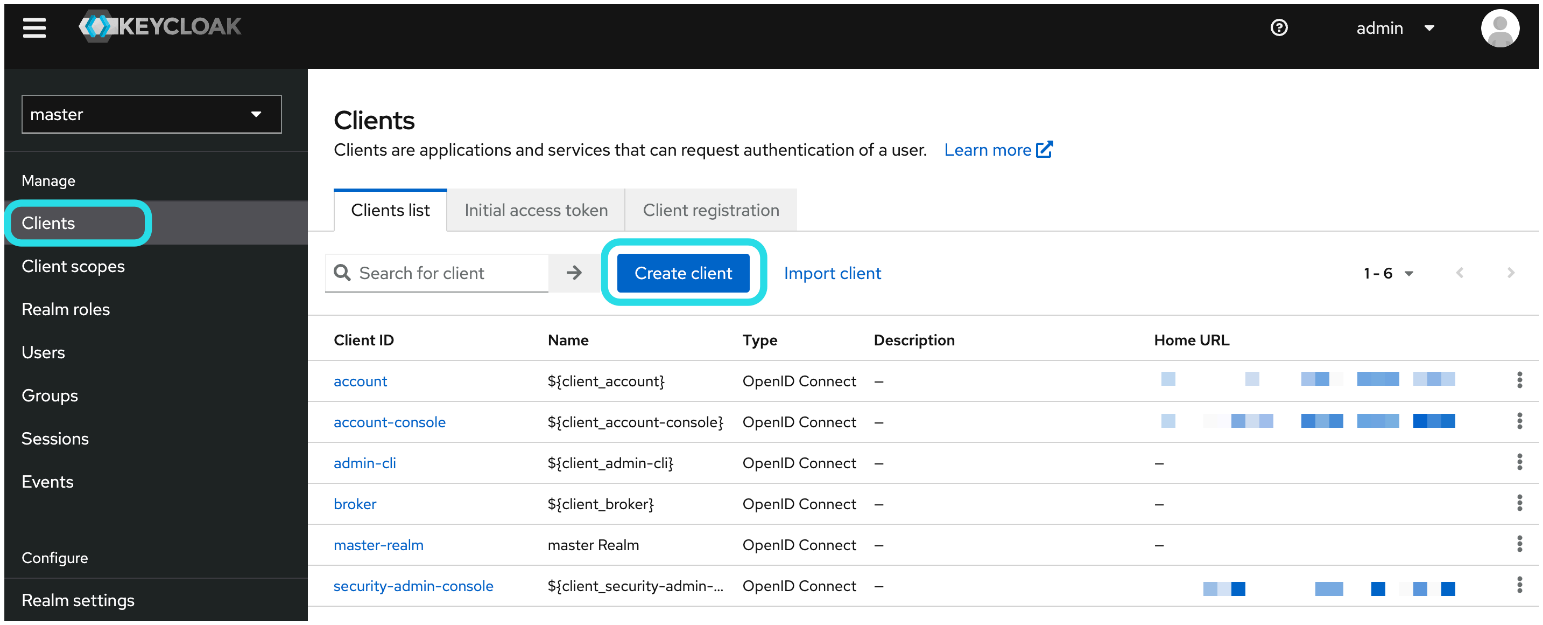
If you haven't already, create a unique **SSO identifier** for your organization and select **SAML** from the the **Type** dropdown. Keep this screen open for easy reference.

You can turn off the **Set a unique SP entity ID** option at this stage if you wish. Doing so will remove your organization ID from your SP entity ID value, however in almost all cases it is recommended to leave this option on.

> **Tip**
>
> There are alternative **Member decryption options**. Learn how to get started using SSO with trusted devices or Key Connector.

Keycloak setup

Login to Keycloak and select **Clients** → **Create Client**.



Clients

Clients are applications and services that can request authentication of a user. Learn more

Client ID	Name	Type	Description	Home URL
account	${client_account}	OpenID Connect	–	[redacted]
account-console	${client_account-console}	OpenID Connect	–	[redacted]
admin-cli	${client_admin-cli}	OpenID Connect	–	–
broker	${client_broker}	OpenID Connect	–	–
master-realm	master Realm	OpenID Connect	–	–
security-admin-console	${client_security-admin-...	OpenID Connect	–	[redacted]

Create a Client

On the Create client screen fill in the following fields:

Field	Description
Client type	Select SAML.
Client ID	Set this field to the pre-generated **SP Entity ID**. This automatically-generated value can be copied from the organization's **Settings** → **Single sign-on** screen and will vary based on your setup.
Name	Enter a name of your choice for the Keycloak client.

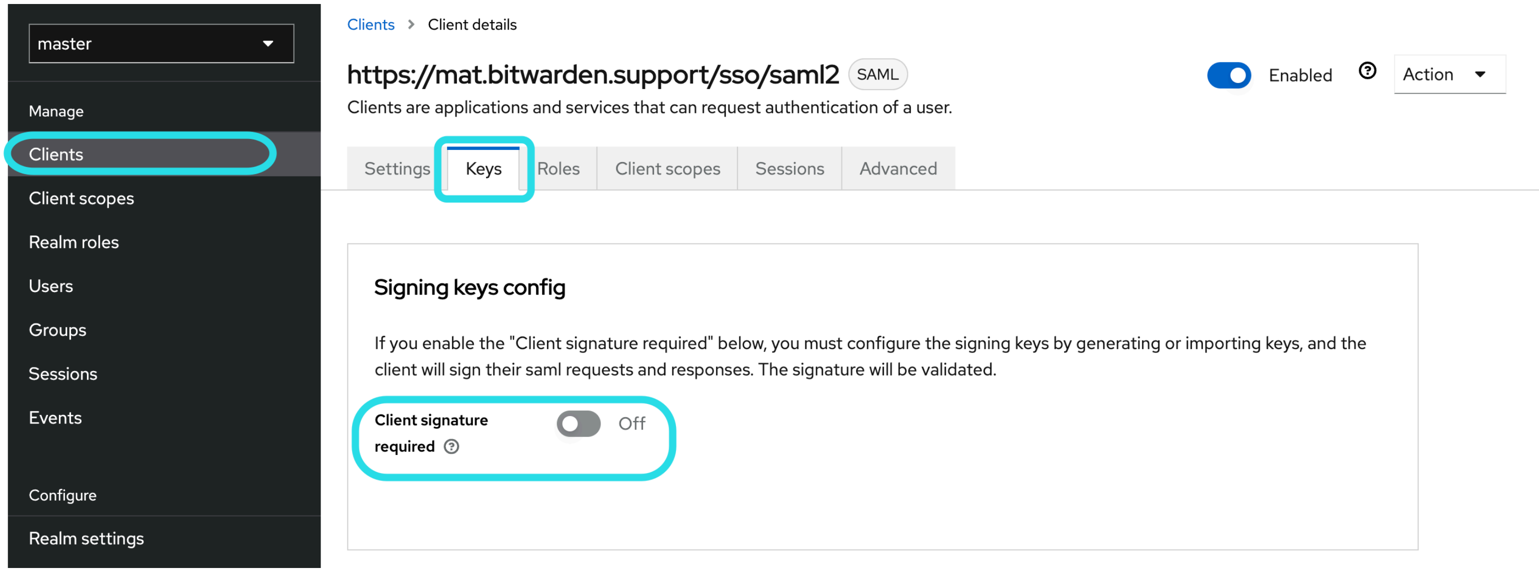
Once you have filled in the required fields on the **General Settings** page, click **Next**.

On the **Login settings** screen, fill in the following field:

Field	Description
Valid redirect URIs	Set this field to the pre-generated **Assertion Consumer Service (ACS) URL**. This automatically-generated value can be copied from the organization's **Settings** → **Single sign-on** screen and will vary based on your setup.

Select **Save**.

Select the Keys tab and toggle the **Client signature required** option to **Off**.



https://mat.bitwarden.support/sso/saml2 SAML

Clients are applications and services that can request authentication of a user.

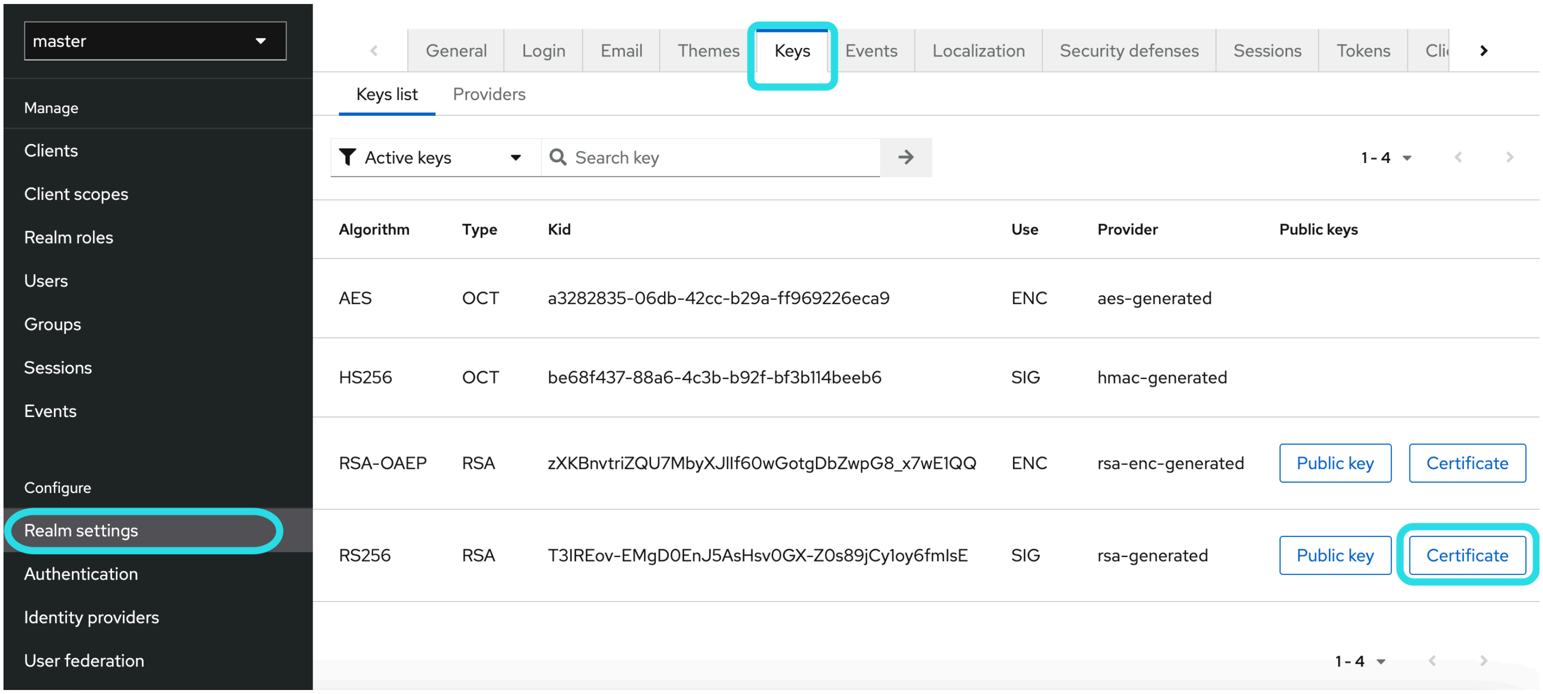
Signing keys config

If you enable the "Client signature required" below, you must configure the signing keys by generating or importing keys, and the client will sign their saml requests and responses. The signature will be validated.

Client signature required: Off

Keycloak Keys Config

Lastly, on the Keycloak main navigation, select **Realm settings** and then the **Keys** tab. Locate the **RS256** Certificate and select **Certificate**.



Algorithm	Type	Kid	Use	Provider	Public keys
AES	OCT	a3282835-06db-42cc-b29a-ff969226eca9	ENC	aes-generated	
HS256	OCT	be68f437-88a6-4c3b-b92f-bf3b114beeb6	SIG	hmac-generated	
RSA-OAEP	RSA	zXKBnvtriZQU7MbyXJlIf60wGotgDbZwpG8_x7wE1QQ	ENC	rsa-enc-generated	Public key Certificate
RS256	RSA	T3IREov-EMgD0EnJ5AsHsv0GX-Z0s89jCy1oy6fmlsE	SIG	rsa-generated	Public key Certificate

Keycloak RS256 Certificate

The value for the certificate will be required for the following section.

Back to the web app

At this point, you have configured everything you need within the context of the Keycloak Portal. Return to the Bitwarden web app and select **Settings** → **Single sign-on** from the navigation.

The Single sign-on screen separates configuration into two sections:

- **SAML service provider configuration** will determine the format of SAML requests.
- **SAML identity provider configuration** will determine the format to expect for SAML responses.

Complete the following fields in the **SAML service provider configuration** section:

Field	Description
Name ID format	Select **Email**.
Outbound Signing Algorithm	The algorithm Bitwarden will use to sign SAML requests.
Signing Behavior	Whether/when SAML requests will be signed.

Field	Description
Minimum Incoming Signing Algorithm	Select the algorithm the Keycloak client is configured to use to sign SAML documents or assertions.
Want Assertions Signed	Whether Bitwarden expects SAML assertions to be signed. If toggled on, make sure you configure the Keycloak client to sign assertions.
Validate Certificates	Check this box when using trusted and valid certificates from your IdP through a trusted CA. Self-signed certificates may fail unless proper trust chains are configured with the Bitwarden login with SSO docker image.

Complete the following fields in the **SAML identity provider configuration** section:

Field	Description
Entity ID	Enter the URL of the Keycloak realm on which the client was created, for example `https://<keycloak_domain>/realms/<realm_name>`. This field is case sensitive.
Binding type	Select **Redirect**.
Single sign-on service URL	Enter your master SAML processing URL, for example `https://<keycloak_domain>/realms/<realm_name>/protocol/saml`.
Single Log Out Service URL	Login with SSO currently **does not** support SLO. This option is planned for future development, however you may preconfigure it with your **Logout URL** if you wish.
X509 public certificate	Enter the **RS256 certificate** that was copied in the previous step. The certificate value is case sensitive, extra spaces, carriage returns, and other extraneous characters **will cause certificate validation to fail**.
Outbound Signing Algorithm	Select the algorithm the Keycloak client is configured to use to sign SAML documents or assertions.

Field	Description
Disable Outbound Logout Requests	Login with SSO currently **does not** support SLO. This option is planned for future development.
Want Authentication Requests Signed	Whether Keycloak expects SAML requests to be signed.

> **ⓘ Note**
>
> When completing the X509 certificate, take note of the expiration date. Certificates will have to be renewed in order to prevent any disruptions in service to SSO end users. If a certificate has expired, Admin and Owner accounts will always be able to log in with email address and master password.

When you're done with the identity provider configuration, **Save** your work.

> **Tip**
>
> You can require users to log in with SSO by activating the single sign-on authentication policy. Please note, this will require activating the single organization policy as well. Learn more.

Additional Keycloak settings

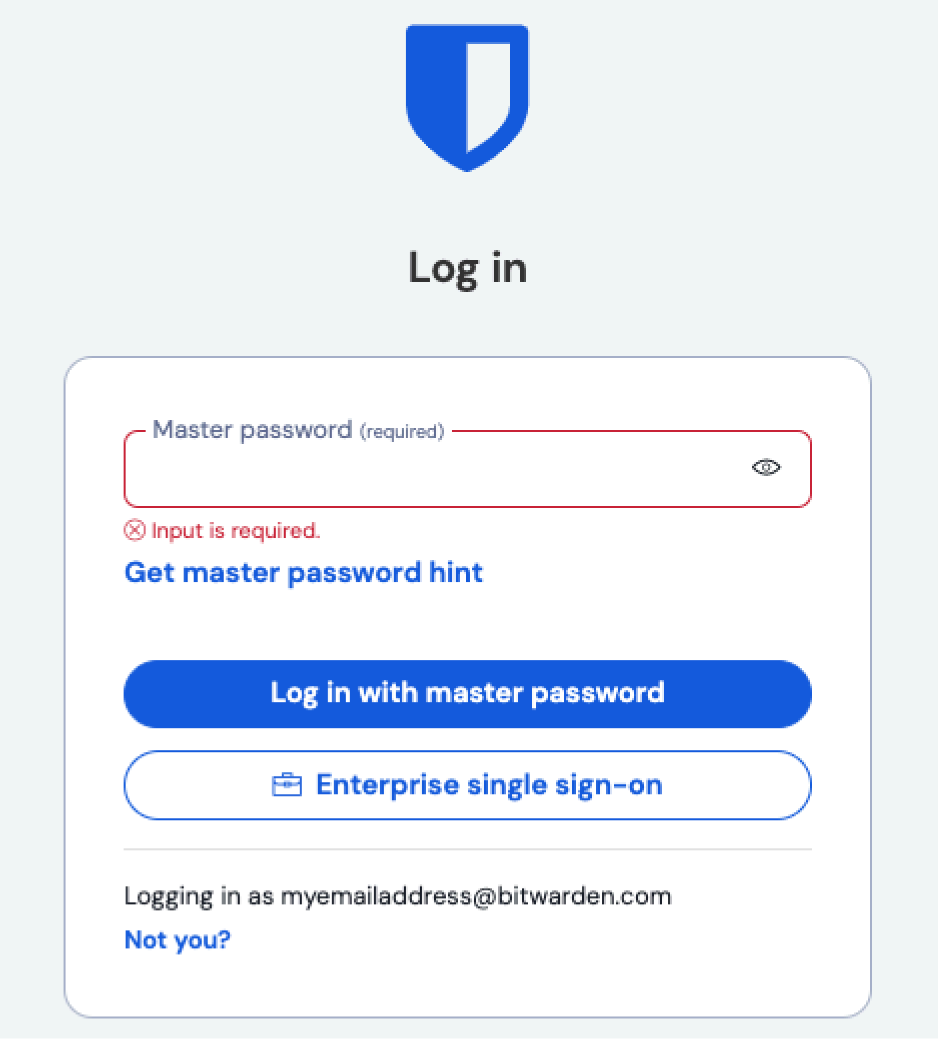
On the Keycloak Client S**ettings tab**, additional configuration options are available:

Field	Description
Sign Documents	Specify whether SAML documents should be signed by the Keycloak realm.
Sign Assertions	Specify whether SAML assertions should be signed by the Keycloak realm.
Signature Algorithm	If **Sign Assertions** is enabled, select what algorithm to sign with (`sha-256` by default).
Name ID Format	Select the Name ID Format for Keycloak to use in SAML responses.

Once you have completed the forum, select **Save**.

Test the configuration

Once your configuration is complete, test it by navigating to https://vault.bitwarden.com, entering your email address, selecting **Continue**, and selecting the **Enterprise Single-On** button:



Log in

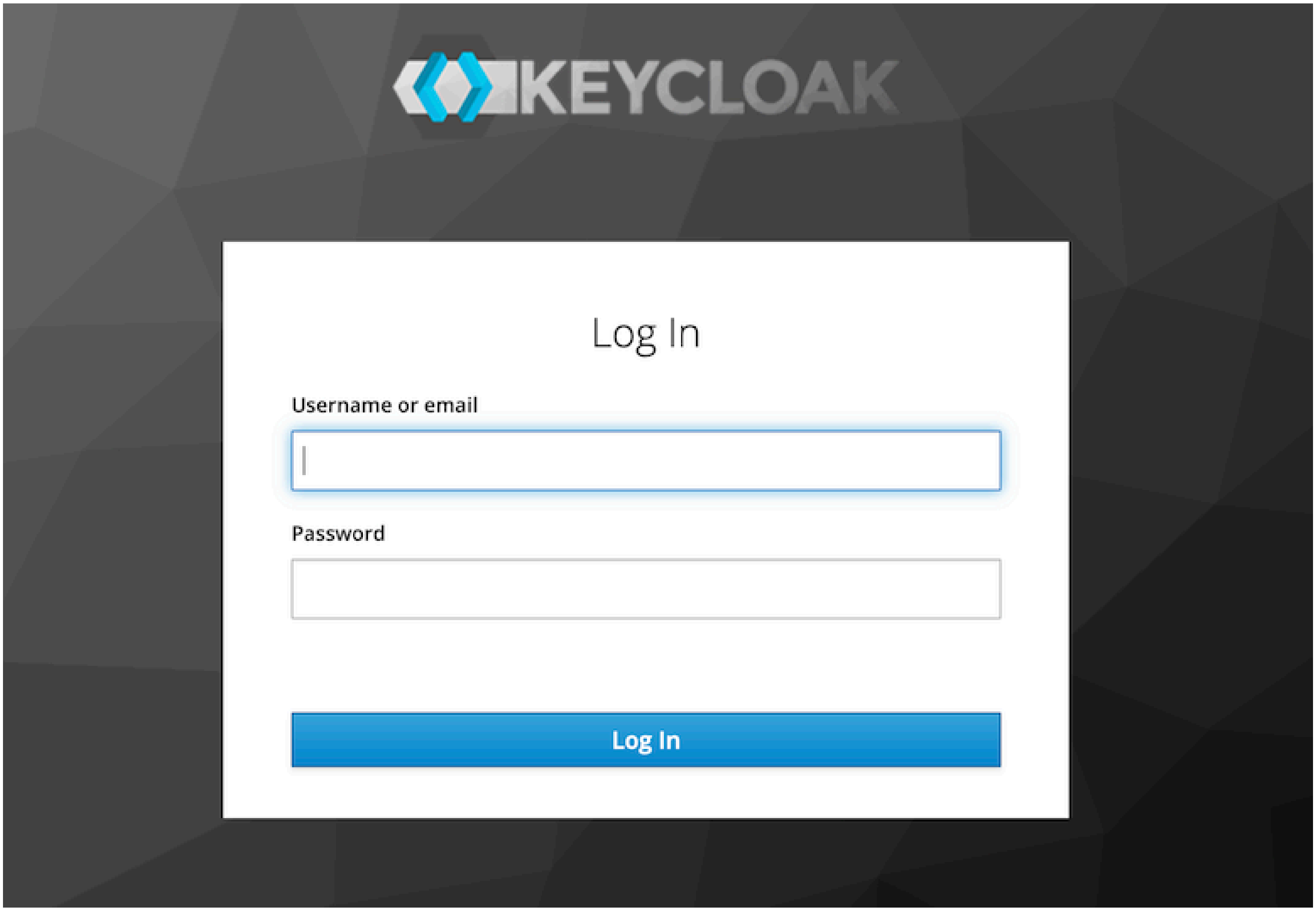
Master password (required)

Input is required.

Logging in as myemailaddress@bitwarden.com

Log in options screen

Enter the configured organization identifier and select **Log In**. If your implementation is successfully configured, you will be redirected to the Keycloak login screen:



Keycloak Login Screen

After you authenticate with your Keycloak credentials, enter your Bitwarden master password to decrypt your vault!

Note

Bitwarden does not support unsolicited responses, so initiating login from your IdP will result in an error. The SSO login flow must be initiated from Bitwarden.