

Deploying passwordless authentication

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How to use this guide

The guide is meant to show you the options for creating passwordless sign-on experiences. Each use case is independent so after going through the prerequisites you can jump right to any of the use cases. For the sake of simplicity, the examples in this guide use bookmark apps.

Who the guide is for

The guide is meant for technical implementers who design, test, and deploy Okta.

Why Passwordless?

Traditional authentication using a username and password has been the foundation of digital identity for over 50 years. But with the ever-growing number of user accounts, there are new issues: the burden on end-users to remember multiple passwords, support costs, and most importantly, the security risks posed by compromised credentials. As a result, the case for eliminating passwords from the authentication experience is getting more compelling every day.

Understanding the need for passwordless authentication starts with understanding the challenges presented by passwords. The core challenges with passwords can be broken down into the following areas:

• **Poor account security** - "80% of hacking-related breaches used either weak or stolen passwords" — Verizon Data Breach Report 2019.

- **Poor user experience** A survey by the University of Oxford predicted that roughly a third of online purchases are abandoned at checkout because people cannot remember their passwords.
- Increased costs -12.6 minutes per week average time spent entering or resetting passwords, \$5m+ cost in productivity and labor lost per company according to 2019 Ponemon Authentication report.

Moving beyond passwords requires some deep thought. Before organizations decide to eliminate passwords, we recommend a gradual approach by looking at threats, technology, user journeys, costs, adoption friction, and implementation.

Going Passwordless

Eliminating passwords and going passwordless can be accomplished using several different technologies.

Fundamentally, passwordless authentication is synonymous with eliminating "knowledge" factor type authentication methods (all memorized secrets). In the table below, we provide an example of definitions of assurance levels (classified in three categories: low, medium & high) and requirements for authentication, as well as the "context" of the device.

Note that these assumptions are not a reference model but an example, and they must be adjusted by or with the customer based on their specific security requirements.

Authentication Assurance Level	Low	Medium	High
Factor Type	Possession	Possession + Registered	Possession + Inherence
Password less Authenticators & Authentication Methods options	Email (magic link)SMS or Phone OTP	 WebAuthn only (the cryptographic key is unique to you) Okta Verify (no biometric) Okta Fastpass (without biometrics) 	 WebAuthn + Okta Verify Push (no biometrics) Okta Fastpass (with Biometrics)
Device Context ⁽¹⁾ or state	Not managed, Not Registered	Registered, Not Managed	Registered and Managed (optional)

(1) Refer to the Device Context 2.0 Deployment Guides for more details

Finally, for even more sophisticated policies enabling passwordless authentication, the user context can be taken into account. Internal users might have different requirements or constraints than contractors or partners. Okta offers flexibility to bring users, networks, and even risk assessment into consideration when designing policies. This is beyond the scope of this Deployment Guide. You can find more information in the App-level Policies Deployment Guide.

Introducing Okta Fastpass

Okta Fastpass is a passwordless authentication method that can satisfy a medium or high assurance level (when combined with biometrics). Okta Fastpass is a new authentication method in Okta Verify.

Okta Fastpass Benefits

End users go through a one-time process with Okta Verify to register their device in Okta's Universal Directory. Registering your device creates a strong user + device binding that establishes an ongoing session to Okta, enabling a secure passwordless login experience.

Okta Fastpass is available on Windows, Mac OS, iOS/iPadOS, and Android and offers the same user-friendly experience across these platforms.

Key benefits include:

- Secure passwordless user experience, offering high assurance level (when used with biometrics)
- Always on productivity, regardless of location
- Modern Universal Directory for administrator visibility, not requiring AD or any other LDAP directory

Strategic considerations when deploying Fastpass

Key concepts & definitions

Registration

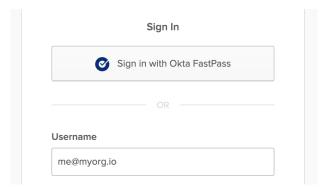
End users go through a registration process with Okta Verify to register their device in Okta's Universal Directory. Registering your device creates a strong user + device binding, which enables a secure passwordless login experience.

Enabling Okta Fastpass

Fastpass is an optional feature of the Okta Verify authenticator and must be first activated in the authenticator configuration. Next, the organization sign-on policy (OSOP) must be set to 'Password/IDP or any factor allowed by app sign-on policy' (ASOP), delegating authentication at the application level. Finally, the ASOP can be tuned to require the end-user to be prompted and asked for biometrics or not, depending on security requirements.

End-user experience

Once activated, a new authentication method, 'Sign in with Okta Fastpass' is made available to the end-user.



Depending on the ASOP policy setting, the end-user is prompted by Okta Verify and/or required to provide biometrics.

Okta administrator experience

Registering devices with Okta Verify is also part of Device Context 2.0. This new feature gives the administrator visibility on the devices that the end-user has registered and for

which Okta Fastpass is available for authentication. For more details about administrator's features, such as suspending or deactivating devices, consult the Device Context 2.0 Deployment Guide.

What do you need to consider before deploying Fastpass?

Okta Fastpass is a powerful new authentication method available with Okta Verify. Major considerations:

- App Level Policies aka ASOP (and their relationship with control the access org sign-on policy (OSOP)) are an enabler of passwordless with Okta Fastpass
- Device Context 2.0 allows for fine control or the context that the user, its devices, and the network he/she is connected to must present in order to be allowed to authenticate with Okta Fastpass

Furthermore, the following considerations must also be taken into account:

- Delegating authentication to ASOP and enabling Fastpass requires carefully crafting ASOP for ALL your applications; default catch-up rules in ASOP might not be enough to protect your apps.
- Although Okta Verify creates a strong binding between users and their devices, it is not a replacement for a device management solution. Limiting Okta Fastpass to managed devices only should be considered for the most sensitive apps.
- As there is a strong binding between user and device, should the end user lose access to the device (or the device is suspended or deactivated by the Okta administrator), it will be impossible for the user to authenticate unless other authenticators are available

Prerequisites

Before you enable any of the passwordless use cases, you have to enable FastPass using Okta Verify as an authenticator at the org level. You only have to do this once to enable all of the use cases.

Discovery questions

Before you deploy passwordless authentication, you should consider the following questions. The answers to these questions will determine what kind of passwordless experience you should use and will also impact configuration settings.

- 1. When is a user allowed this experience based on device context-should it be all devices? Registered devices only? Managed devices only?
- 2. What requirements does a login event need to meet to allow this flow?
- 3. What kind of devices are predominant in the environment? Do all of these have native biometric access? Do you want to enforce biometric flows each time?

- 4. What are your authentication requirements per app? You should understand Okta assurance levels and how they apply to authenticator types.
- 5. What other factors are allowed in Okta?
- 6. Does your organization use Active Directory?
- 7. Do you allow users to bring their own devices?
- 8. Do you want a different user experience depending on the device platform (for example, ios or Windows)?
- 9. Do you want users to be logged in silently without any user interaction?
- 10. Do you want your app policies to apply to users coming in from specific network zones?

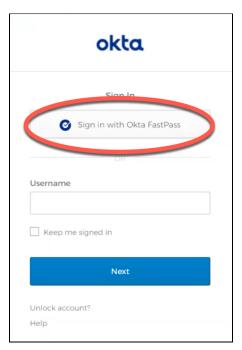
Enable FastPass using Okta Verify as an authenticator

- 1. Open the admin console for your tenant.
- 2. Navigate to **Security > Authenticators**.
- In the Authenticators section, enable FastPass using Okta Verify by selecting Actions > Edit.
- 4. On the **Okta Verify** screen, in the **Verification options** section, select **Okta Fast** (All platforms).
- 5. In the Okta FastPass section, select Show the "Sign in with Okta FastPass" button.

Selecting Show the "Sign in with Okta FastPass" button does three things.

- 1. It walks first-time users through installing Okta Verify and registering a device.
- 2. It allows an alternative if the end user's configuration doesn't permit silent sign-on. For example, mac users without a device management solution like Jamf Pro or a safari SSO browser extension will not be able to sign in silently. Enabling the button allows these users a way to sign in.
- 3. It acts as a backup if Okta Verify doesn't load automatically.

Here's what end-users will see if you enable the **Show the "Sign in with Okta FastPass"** button.



Note: Okta Verify with Biometrics enabled

If the end-user has Okta Verify installed on the device with Biometrics enabled for Okta Verify, Okta will **prompt the user for Biometrics every time** irrespective of the app-level sign-on policy. Using Biometrics means that the user has satisfied a higher level of assurance. It simplifies the login to any other app requiring a higher level of assurance which the user may attempt to access during their current session.



Note: User Enumeration

This feature is intended to protect against attackers who try to find user accounts and authenticator enrollments. If this is enabled, any first-time sign-in from an unknown device will show a standard default flow with password/email options if authentication is allowed. Once the user has successfully logged in with password/email options from that device, they will be presented with all the available authenticators for subsequent authentication attempts.

Create a FastPass group

To simplify the examples in the rest of this document, create a group for passwordless sign-on and add a person to it. We're using bookmark apps for demonstration purposes but in your environment, you'd use whatever app integration you need for each app.

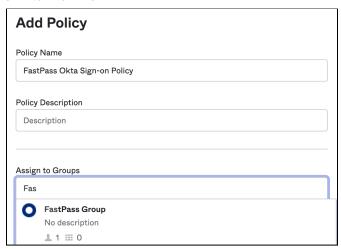
- 1. In your admin console, navigate to **Directory > Groups** and click **Add Group**.
- 2. In the **Add Group** dialog, enter a **Name**, for example, **FastPass Group 1**, and optionally a **Group Description** and click **Add Group**.
- 3. Navigate to **Directory** > **People** and click **Add person**.
- 4. In the **Add Person** dialog, add a **First name**, **Last name**, **Username**, and **Primary email**. Add your own email to the **Secondary email** field.
- 5. In the **Groups** field, select the FastPass group you created in step 2.
- 6. In the **Password** field, select **Set by admin**, enter a password and deselect **User must change password on first login**.
- 7. Click **Save**. This is the group you'll use to walk through the steps for the first use case called <u>Simple security with 1-factor authentication</u>.
- 8. Optionally create two more groups (FastPass Group 2 and FastPass Group 3) for the other two use cases described in this document: Registered & unmanaged devices, and WebAuthn (FIDO2).

Create an Okta sign-on policy

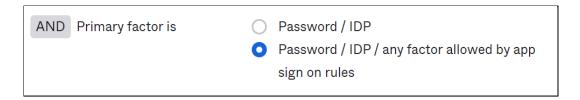
Configuring passwordless authentication requires you to change your Okta Sign-On Policy by adding a higher priority rule. This change shifts responsibility for defining and enforcing strict authentication requirements to each of your app sign-on policies. Before you remove this global requirement in your Okta Sign-On Policy, make sure to protect all of your apps with a strong app sign-on policy. It's a best practice to leave the default sign-on policy with its original settings.

 In your admin console, navigate to Security > Okta Sign-on Policy and select Add New Okta Sign-on Policy.

- In the Add Policy dialog, enter a Policy Name. A best practice is to add "Okta Sign-on Policy" to the name so that it's easy to see which policies are Okta sign-on policies when you read the logs.
- 3. Assign this policy to the group you created in the previous procedure. It will look similar to this:

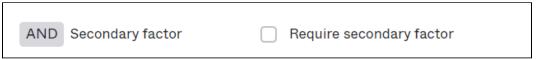


- 4. Click Create Policy and Add Rule.
- 5. In the **Add Rule** dialog, enter a **Rule Name**.
- 6. In the **Primary factor field**, select **Password / IDP / any factor allowed by app sign on rules**.



By default, **Password / IDP** is selected, indicating a legacy sign-in flow that always prompts for a password. In the new sign-on flow, we first determine who the user is and then assess MFA requirements based on the application they're trying to access. The combination of the user and application tells Okta which policy applies. The application sign-on policy determines which factors are required or allowed.

7. Deselect Require secondary factor.



Passwordless authentication is incompatible with requiring a secondary factor. Deselecting this option removes the requirement for MFA for every app in this Org and will make the Okta Sign-On policy defer completely to the application

level sign-on policies to determine what authenticators are needed to access the app.

Use cases

In this section, we will cover three passwordless use cases. Using the example of assurance level and authentication method to achieve them given in the 'Going passwordless' section above, we will cover two medium and one high assurance level.

Here are the use cases described in this document.

- 1. Medium assurance level: Simple security with 1-factor authentication
- 2. **Medium assurance level**: FIDO2(WebAuthn)
- 3. **High assurance level**: Registered & unmanaged devices with 2-factor authentication

Simple security with 1-factor authentication

In this use case, only one-factor type is required to authenticate. The main objective is to show Okta Fastpass in action to offer a passwordless experience. If the policy does not require biometrics, this example is classified as having a medium assurance level.

Create a bookmark app

- 1. In your admin console, navigate to **Applications > Applications** and select **Browse App Catalog**.
- 2. In the **Search** box, type bookmark app, select **Bookmark App**, and click **Add**.
- 3. On the **Add Bookmark App** screen, change the Application label to **Bookmark App 1**.
- 4. Enter a **URL** and click **Done**. Because this app is for demonstration purposes only, you can choose any url you like. In a real environment, you would use the url of the app you're setting up SSO for.
- 5. Select the **Assignments** tab.
- 6. Select **Assign > Assign to Groups**, and then select **Assign** for **FastPass Group 1**. Don't click the group name unless you want to review the group properties.
- 7. Click **Done**.

Create an app sign-on policy

Create an application sign-on policy to allow for one-factor authentication so end-users can sign in without a password. When you create an app sign-on policy, you should

consider who the policy applies to. Which specific users, groups, user types, or specific users should this policy apply to?

- In your admin console, navigate to Applications > Applications and select Bookmark App 1.
- 2. Select the **Sign On** tab.
- 3. You will see a default sign-on policy with a **Catch-all Rule** that requires passwords.
- 4. Select Add Rule.
- 5. In the Add Rule dialog, add a rule name, for example, Bookmark App 1 rule.
- 6. In the **User's user type is** field, select **Any user type**.
- 7. In the User's group membership includes a field, select At least one of the following groups.
- 8. Start typing the name of the group you created in the prerequisites and then select it, for example, **FastPass Group 1**.
- 9. In the User is field, select Any user.
- 10. In the **Device State** field, select **Registered**.
 - If a device is registered, the Okta sign-in widget polls the user's device to see if Okta Verify is installed. If it is, and if an account for that particular tenant is registered with Okta Verify, Okta is able to identify the user.
 - Selecting this option also prompts the user to install Okta Verify and register their device on first use.
 - If you select **Any** instead of **Registered**, the user will always see the login page, and the Okta Sign-in Widget will not silently poll Okta Verify to authenticate the user. Registered also means that if Okta Verify is installed, the end-user will not see other authenticators even if they also have them installed.
- 11. Use default values for **Device Platform(Any platform)** and the **User's IP(Any IP)**. Also, leave the "**The following custom expression is true**" field blank. You can use the Okta Expression Language (EL) to add a custom expression to an app sign-on policy.
- 12. For the "User must authenticate with" field, choose Possession factor because Okta Verify is a possession factor.

Note:

- If you choose **Any 1 factor type**, the app level Sign-On policy would present the user with a list of their enrolled authenticators (including password), allowing them to pick whichever one they want to use.
- 13. In the Access with Okta FastPass is granted field, choose Without the user approving a prompt in Okta Verify or providing biometrics. If you choose the other option, If the user approves a prompt in Okta Verify or provides biometrics, the user will always see the sign-in screen and will have to select Sign in with Okta FastPass.
- 14. In the **Re-authentication frequency field**, choose **Every sign-in attempt**. That means the authenticator has to be verified every time the user accesses the app.

If you choose **Re-authenticate after:**, the authenticator will re-authenticate if it hasn't been used within the given timeframe. The re-authentication frequency timestamp indicates the start of the authorization period and does not change when the authorization is reused for another app. It changes when the authorization period expires and needs to be reauthorized.

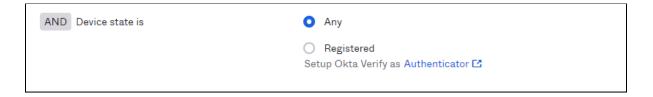
15. Click Save.

Test the sign-on flow

- In another browser instance or incognito window, navigate to the Okta end-user dashboard for this org. When you are changing settings, you should always clear the browser before you test the settings.
- 2. You should be directly signed into the app without any user interaction.

Alternate sign-on flow

If you select **Any** instead of **Registered** in the **Device State** field,



users will always be redirected to the Okta Sign-in Widget (no silent authentication).

okta

Sign In		
(Sign in with Okta FastPass	
Usernan	ne	
Keep	me signed in	

FIDO2(WebAuthn)

In this use case, the end-user will be offered a passwordless experience with a WebAuthn authenticator on an unmanaged device. In our example, this is classified as a medium assurance level.

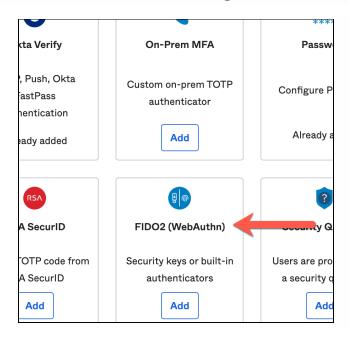
FIDO2 Web Authentication (WebAuthn) is a standard web API that is incorporated into web browsers and related web platform infrastructures that are used to securely authenticate users on the web across various sites and devices. For more information about the FIDO2 WebAuthn standard, see FIDO2 Project.

You can configure FIDO2 (WebAuthn) as a multifactor authentication (MFA) option. The WebAuthn standard provides users with new methods to authenticate with MFA factors that are enabled and configured specifically for WebAuthn. When you configure a WebAuthn authenticator, users must provide additional verification when signing in to Okta. Users can enroll in up to 10 instances of the same WebAuthn authenticator. Users set themselves up either from the sign-in widget or from settings on their end-user dashboard.

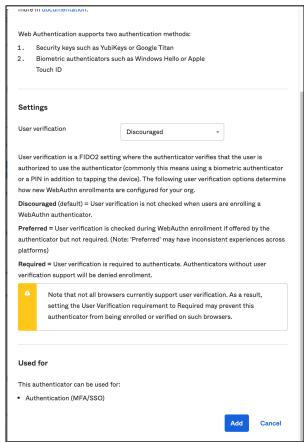
Add the WebAuthn authenticator

Okta's WebAuthn Biometric authenticator follows the FIDO2 Web Authentication (WebAuthn) standard.

- 1. In your admin console, go to **Security > Authenticators**.
- 2. On the **Setup** tab, click **Add Authenticator**.
- 3. In the Add Authenticator dialog, click Add on the FIDO2(WebAuthn) tile.



4. In the Add FIDO2 (WebAuthn) dialog, leave all default settings and click Add.



When you configure your org with **User Verification** set to **Discouraged**, end-users who enroll a WebAuthn factor do not see the WebAuthn enrollment names of the factors they enroll; they are listed generically as **Authenticator**, and no other details about the factor are provided.

Create a bookmark app

- In your admin console, navigate to Applications > Applications and select Browse App Catalog.
- 2. In the **Search** box, type bookmark app, select **Bookmark App** and click **Add**.
- 3. On the Add Bookmark App screen, change the Application label to Bookmark App 2.
- 4. Enter a **URL** and click **Done**. Because this app is for demonstration purposes only, you can choose any URL you like. In a real environment, you would use the URL of the app you're setting up SSO for.

- 5. On the **Assignments** tab, select **Assign > Assign to Groups**, and then select **Assign** for **FastPass Group 3**. Don't click the group name unless you want to review the group properties.
- 6. Click Done.

Create an app sign-on policy

Create an application sign-on policy to allow for biometric authentication for end-users.

- 1. In your admin console, navigate to **Applications > Applications** and select **Bookmark App 2**.
- 2. Select the **Sign On** tab.
- 3. You will see a default sign-on policy with a **Catch-all Rule** that requires passwords.
- 4. Select Add Rule.
- 5. In the Add Rule dialog, add a rule name, for example, Bookmark App 2 rule.
- 6. In the User's user type is field, select Any user type.
- 7. In the **User's group membership includes a field**, select **At least one of the following groups**.
- 8. Start typing the name of the group you created in the prerequisites and then select it, for example, **FastPass Group 2**.
- 9. In the **User is** field, select **Any user**.
- 10. In the **Device State** field select **Any**. This turns off the silent polling feature of the Okta Sign-In Widget, which means the Sign-In Widget will display options for the authenticators you have enabled for your users.
- 11. Use default values for **Device Platform(Any platform)** and the **User's IP(Any IP)**. Also, leave the "**The following custom expression is true**" field blank. You can use the Okta Expression Language (EL) to add a custom expression to an app sign-on policy.
- 12. For the "User must authenticate with" field, choose Possession factor. Choosing possession factor would exclude "Password" as an authenticator in this policy.
- 13. Leave the default values in the other fields and select **Save**.

Test the sign-on flow

- In another browser instance or incognito window, navigate to the Okta end-user dashboard for this org. When you are changing settings, you should always clear the browser before you test the settings.
- 2. On the sign-in widget, users will be prompted to authenticate with their **Security Key** or **Biometric Authenticator.**

Registered & unmanaged devices with 2-factor authentication

In this use case, the end-user will be offered a passwordless experience with Okta Fastpass with biometrics on a registered but not managed device. This is classified as a high assurance level.

Create a bookmark app

- 1. In your admin console, navigate to **Applications > Applications** and select **Browse App Catalog**.
- 2. In the **Search** box, type *bookmark app*, select **Bookmark App** and click **Add**.
- 3. On the **Add Bookmark App** screen, change the Application label to **Bookmark App 2**.
- 4. Enter a **URL** and click **Done**. Because this app is for demonstration purposes only, you can choose any URL you like. In a real environment, you would use the URL of the app you're setting up SSO for.
- 5. Select the **Assignments** tab.
- 6. Select **Assign > Assign to Groups**, and then select **Assign** for **FastPass Group 3**. Don't click the group name unless you want to review the group properties.
- 7. Click Done.

Create an app sign-on policy

Create an application sign-on policy to allow for biometric authentication for end-users. These steps use one of the bookmark applications you created in the prerequisites section.

- 1. Navigate to **Applications > Applications** and select **Bookmark App 3**.
- 2. Click Add Rule.
- 3. In the **Add Rule** dialog, add a rule name.
- 4. In the **Device State** field, select **Any**. This turns off the silent polling feature of the Okta Sign-In Widget, which means the Sign-In Widget will display options for the authenticators you have enabled for your users.
- 5. Use default values for Device Platform(Any platform) and the User's IP(Any IP). Also, leave the "The following custom expression is true" field blank. You can use the Okta Expression Language (EL) to add a custom expression to an app sign-on policy.
- 6. In the Access field, select Allowed after successful authentication.
- 7. For the "User must authenticate with" field, choose Any 1 factor type.
- 8. In the Access with Okta FastPass is granted field, choose If the user approves a prompt in Okta Verify or provides biometrics. This way, the user will always see the sign-in screen and will have to select which authenticator to use.

9. Leave the default values in the other fields and select **Save**.

Test the sign-on flow

- 1. In another browser instance or incognito window, navigate to the Okta end-user dashboard for this org. When you are changing settings, you should always clear the browser before you test the settings.
- 2. You should see the Sign-in Widget with an option for Okta Verify. If you choose that option, you'll be asked for biometric confirmation.

Other passwordless experiences

You can also provide passwordless sign-in with other Okta features but they are outside of the scope of this document.

Enhanced experience using the Okta SSO browser extension	If supported by the app's sign-on policy, you can provide Okta Verify-enrolled users an Okta FastPass experience on Safari browsers only if their device is managed and you've configured Apple Extensible Single Sign-On (SSO) in your mobile device management (MDM) solution. The configuration defines extensions for multi-factor user authentication on macOS devices enrolled in an MDM solution.
Email Magic Link	You can create an app sign-on policy to provide passwordless access to apps with an email magic link that your end-users can click to sign in to an application.
Agentless Desktop Single Sign-On	With agentless Desktop Single Sign-on (DSSO), you don't need to deploy IWA agents in your Active Directory domains to implement DSSO functionality. This reduces or eliminates the maintenance overhead and provides high availability as Okta assumes responsibility for Kerberos validation. The same experience can be achieved with Okta Fast Pass silent authentication flow.