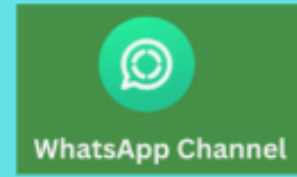


@devopschallengehub



## IAM: Identity Federation & SSO

### How would you implement federation with corporate identity providers?

#### ✓ What is Federation?

- Federation allows users to **log in to AWS using corporate credentials (SSO)**.
- No need to create IAM users for each employee.
- Uses **SAML 2.0, OIDC, or Web Identity Federation**.

OpenID Connect (OIDC) is . It's an authentication protocol that verifies user identity and provides basic profile information. Essentially, it allows clients to verify the identity of a user based on authentication performed by an identity provider (IdP)

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#### How to Implement Federation :

1. **Choose your Identity Provider (IdP)**
  - E.g., Azure AD, Okta, Google Workspace.
2. **Create a SAML Identity Provider in AWS IAM**
  - Go to IAM → Identity Providers → Add provider → Choose SAML.
  - Upload the IdP's metadata XML.
3. **Define IAM Role(s) for Federation**
  - Create a role with trust policy for the IdP.
  - Add permissions (e.g., EC2ReadOnly, S3FullAccess).
4. **Set Up Trust Relationship**

- The role's trust policy should allow the IdP to `sts:AssumeRole`.

## 5. Configure the IdP

- Add AWS as a "SAML application" in IdP (like Azure AD).
- Set role mapping and pass SAML assertions.

## 6. Test Login via SSO

- Users log in to corporate portal → click AWS app → get temporary access.

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### Note:

- You can use **AWS CLI with SAML** using tools like `aws-iam-authenticator` or scripts to fetch credentials.
- Use in **DevOps pipelines** without hardcoding IAM users.

# What is SAML 2.0, OIDC, and Web Identity Federation?

These are **identity federation protocols** — they allow users to **sign in to one system (like Google or Facebook)** and then access another system (like your company's internal tool) **without needing a new username and password**.

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## 1. SAML 2.0 (Security Assertion Markup Language)

- Used mostly in enterprise (corporate) setups.
- Based on XML.
- Common with tools like **Salesforce, Office 365, SAP**, etc.
- Enables **Single Sign-On (SSO)**.

### How it works:

- You try to access a service (e.g., Salesforce).
- You're redirected to your **Identity Provider (IdP)** (e.g., Okta, ADFS).
- IdP authenticates you and sends a **SAML assertion** (an XML file) back to Salesforce.
- You're logged in.

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## 2. OIDC (OpenID Connect)

- Built on top of **OAuth 2.0**.

- Used for **modern web/mobile apps**.
- Based on **JSON** and REST APIs.
- Supported by **Google, Microsoft, AWS Cognito**, etc.

### How it works:

- User logs in through an Identity Provider (e.g., Google).
- They are issued an **ID token (JWT)** + **Access token**.
- The app uses these tokens to log you in and access resources.

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## 3. Web Identity Federation

- Lets users **sign in using third-party identity providers** (like Google, Facebook, Amazon) to access **cloud resources**, especially **AWS**.

### Common with:






- **AWS Cognito + IAM roles**.
- Mobile/web apps that don't have their own authentication system.

### How it works (AWS example):

- User signs in with Google.
- Google returns a token.
- That token is exchanged for **temporary AWS credentials**.
- The user accesses AWS services **securely without hardcoding keys**.

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## Why These Are Required:

Problem	Why Identity Federation Helps
 Multiple logins	Users can use one identity across apps (SSO)
 Security risks	Reduces password reuse and phishing risk
 Centralized control	Companies can manage access policies from one place
 Mobile/web apps	Supports third-party login without storing passwords
 Cloud resource access	Enables temporary, secure access (no need for long-term keys)

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## Quick Summary:

Protocol	Best For	Format	Common Use
<b>SAML 2.0</b>	Enterprises	XML	SSO in corporate apps
<b>OIDC</b>	Web/Mobile apps	JSON (JWT)	Login via Google, Apple, etc.
<b>Web Identity Federation</b>	Cloud apps (AWS)	Token exchange	Secure AWS access with third-party login

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**1. Which of the following protocols is most commonly used for enterprise Single Sign-On (SSO)?**


- A. OAuth 2.0
- B. OpenID Connect
- C. SAML 2.0
- D. LDAP

 **Answer:** C. SAML 2.0

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**2. Which protocol uses JSON Web Tokens (JWTs) and is built on top of OAuth 2.0?**


- A. Kerberos
- B. OpenID Connect
- C. SAML 2.0
- D. Basic Auth

 **Answer:** B. OpenID Connect

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**3. In AWS, Web Identity Federation allows users to sign in using:**

- A. IAM usernames and passwords
- B. MFA codes only
- C. Social identity providers like Google, Facebook
- D. Static access keys only

 **Answer:** C. Social identity providers like Google, Facebook