Amazon Cognito / S3 Backups

🛡️ Amazon Cognito

Overview

- **Amazon Cognito** is a fully managed authentication and authorization service for securing web and mobile applications.

- Supports **user sign-up, sign-in, multi-factor authentication (MFA), and user management**.

- Enables integration with **OAuth, SAML, OpenID Connect (OIDC)**, and **social identity providers** (Google, Facebook, Apple).

- **Free tier**: Up to **50,000** monthly active users, which is plenty with our shared account

- Cost-efficient compared to building authentication from scratch.

Core Components

1️⃣ User Pools (Authentication)

- A **user directory** that manages sign-up and sign-in flows.

- Supports:

  - Email/phone-based **verification**

  - **Password recovery**

  - **Multi-Factor Authentication (MFA)**

  - **OAuth 2.0, OpenID Connect, and SAML** integrations

2️⃣ Identity Pools (Authorization)

- Grants **temporary AWS credentials** (IAM roles) for accessing AWS services.

- Supports **federated identities** from:

- **User Pools**

- **Social providers** (Google, Facebook, Apple, Amazon)

- **Enterprise identity providers** (via SAML, OIDC)

3️⃣ Hosted UI (Prebuilt Auth Pages)

- Amazon Cognito provides a **hosted authentication UI**, eliminating the need to build custom login screens.

- Includes **sign-in, sign-up, account verification, and password reset** flows.

Implementation Steps

🔷 User Creation (Admin Account)

1. Navigate to the **AWS Cognito Console**.

2. Create a **User Pool**.

3. In the Cognito console:

   - Go to **Users and Groups** → Click **Create User**.

   - Fill in details:

      - **Username**

      - **Email/Phone Number**

      - **Temporary Password**

   - Check **Mark email as verified** (if applicable).

4. Save & notify the user to log in and set a new password.

🔷 User Group Management

1. Navigate to **User Pools** → **Users and Groups**.

2. Click **Create Group**.

3. Assign IAM permissions (if needed).

4. Available roles:

- **Admin** (Full control)

- **Driver** (Limited access)

- **Sponsor** (Can manage specific features)

5. Assign users to groups from the Cognito dashboard.

🔷 Configuring Multi-Factor Authentication (MFA)

1. Go to **User Pool settings** → **MFA and Verifications**.

2. Enable **MFA** (SMS or TOTP-based authentication).

3. **Force MFA** for specific users or all users.

🔷 Integrating Cognito with AWS Amplify

- **AWS Amplify** offers built-in Cognito authentication.

- Steps to integrate:

```
amplify add auth
```

- Select **Default configuration** or customize settings.
- Run:

```
amplify push
```

- Integrate with the frontend using:

```javascript
import { Auth } from 'aws-amplify';
Auth.signIn(username, password);
```

🛡️Amazon S3 Backups

- **Amazon RDS (Relational Database Service)** supports automated backups, manual snapshots, and point-in-time recovery.

- **Amazon S3 (Simple Storage Service)** can be used as an additional backup solution for **long-term retention, cost savings, and cross-region replication**.

- Storing RDS backups in S3 is useful for:
  - **Disaster recovery**
  - **Compliance & archiving**
  - **Cost-effective storage**
  - **Cross-region replication**

🏗️ Backup Methods

There are multiple ways to back up **Amazon RDS** to **Amazon S3**:

1️⃣ Exporting RDS Snapshots to S3 (Native AWS Feature)

- AWS allows exporting **Amazon RDS/Aurora snapshots** to **Amazon S3** in **Parquet format**.
- **Benefits**:
  - Compressed **columnar storage** (Parquet) for **faster queries**.
  - Can be analyzed with **Amazon Athena, Redshift, or SageMaker**.

✅ Steps to Export a Snapshot to S3

1. **Create an RDS Snapshot**
   - Navigate to **AWS RDS Console** → Select **Databases**.
   - Click **Create Snapshot**.
   - Wait for the snapshot creation to complete.

2. **Export Snapshot to S3**
   - Go to **Snapshots** → Select your snapshot.
   - Click **Export to Amazon S3**.
   - Configure:
     - **S3 Bucket** (must be in the same region).

- IAM Role (grant RDS access to S3).

- Export format: Parquet.

3. Monitor the Export Process

- Check status in AWS RDS → Exports.

- Once complete, files appear in S3.