AWS Amplify

A complete solution that allows frontend web and mobile developers to easily build, connect, and host fullstack applications.

Front end hosting that also has backend integration.   
  
Integrates with Amazon Cognito to add user sign in, sign up, and 2FA.  
  
Able to use Amazon DynamoDB.   
  
For the API’s Amplify supports GraphQL

**Features:**

**•** Data: Builds secure, real time API’s backed by AWS databases quickley and easily.

• Auth: Enable secure authentication flows and control access to data, files and more.

• Storage: Store and manage app content and data.

• Functions: Add functions and configure environment variables.

• Extensibility: Add, extend, and customize any AWS service by simply authoring CDK code.

• Mobile: Leverage a single backend across web and mobile apps.

**Use Cases:**

* Building mobile or web apps with real-time and offline functionality.
* Easily deploying and managing web applications using a serverless architecture.
* Quickly integrating user authentication, data storage, APIs, and machine learning services.

**DynamoDB**:  
AWS Amplify uses DynamoDB, a fully managed NoSQL database, for scalable, low-latency storage. You can configure DynamoDB as the backend database for your app, enabling real-time data updates. Amplify automatically provisions DynamoDB tables when you use it with GraphQL APIs (via AppSync) and sets up necessary schema relationships.

Key benefits:

* **Auto-scaling**: Amplify ensures that your DynamoDB tables are configured for scaling based on demand.
* **Easy CRUD operations**: Through Amplify, DynamoDB integrates seamlessly for creating, reading, updating, and deleting data using simple configurations in your GraphQL schema.

**GraphQL (AWS AppSync)**:  
Amplify works with AWS AppSync to provide a managed GraphQL API, which allows for real-time updates and flexible querying. With AppSync, you can set up resolvers that connect to DynamoDB tables, and Amplify auto-generates code and schema based on the structure.

Key features:

* **Real-time subscriptions**: GraphQL allows for real-time updates where changes in DynamoDB can be pushed live to the client.
* **Customizable resolvers**: You can define how AppSync interacts with DynamoDB using VTL templates or Lambda resolvers for custom logic.
* **Code generation**: Amplify generates code for interacting with GraphQL queries, mutations, and subscriptions.

**Cognito**:  
AWS Cognito provides authentication and authorization services for applications. Amplify integrates seamlessly with Cognito to handle user sign-up, sign-in, and access control. It manages identity pools and user pools, ensuring secure access to your AWS resources, including your GraphQL API and DynamoDB.

Key advantages:

* **User management**: Amplify automatically configures Cognito user pools for authentication, complete with user sign-up, MFA, and email verification.
* **Authorization with GraphQL**: You can use Amplify to set fine-grained access controls in GraphQL schemas based on Cognito groups or users.
* **OAuth integration**: Amplify easily integrates Cognito with social logins (e.g., Google, Facebook) and third-party identity providers.