
AWS
re:Invent

OPN204

Accelerate that app with AWS Amplify open-source framework

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Senior Developer Advocate

Amazon Web Services

AWS re:Invent

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Agenda

Introduction to AWS Amplify

Amplify command line interface (CLI)

Amplify client libraries

Building an application programming interface (API) from scratch

Connecting to a front end



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AWS Amplify



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AWS Amplify: Solution Across App Lifecycle

DEVELOP

- Authentication
- DataStore
- Storage
- API
- Analytics
- PubSub
- Predictions
- Interactions
- Notifications

Libraries

CLI

Admin UI

NEW!

DELIVER

Static Web Hosting

- Fully managed
- Full stack deployments
- CI/CD built in
- Pull request previews

Tools

CLI

Console

MANAGE

NEW!

Authentication

- Manage users & groups

DataStore

- Manage data content

Admin UI



Amplify Framework (OSS)

Amplify Console (Service)

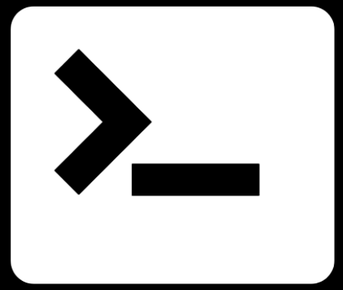
Amplify Framework (OSS)



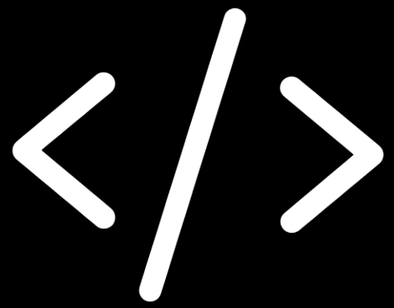
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Amplify Framework

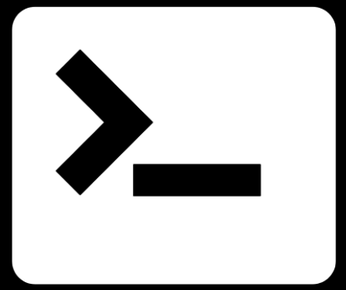


CLI

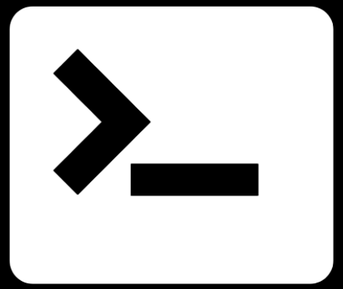


Client Libraries

Amplify CLI



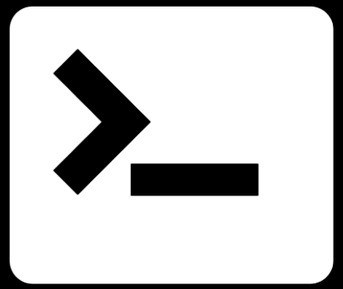
Amplify Framework



CLI

- Provision, update, and manage cloud services

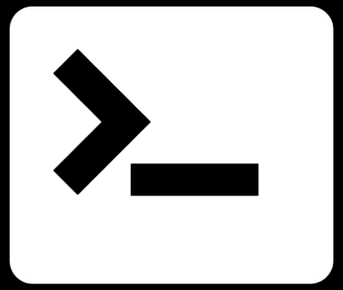
Amplify Framework



CLI

- Provision, update, and manage cloud services
- Code generation

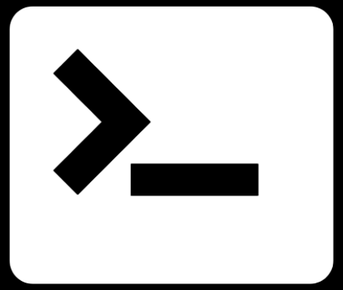
Amplify Framework



CLI

- Provision, update, and manage cloud services
- Code generation
- Provision infrastructure as code

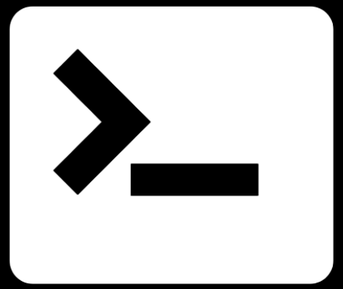
Amplify Framework



CLI

- Provision, update, and manage cloud services
- Code generation
- Provision infrastructure as code
- Local testing / mocking

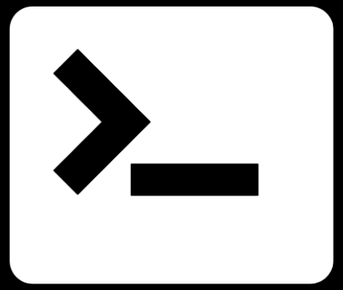
Amplify Framework



CLI

- Provision, update, and manage cloud services
- Code generation
- Provision infrastructure as code
- Local testing / mocking
- Initialize existing projects

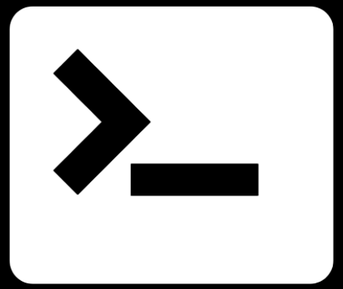
Amplify Framework



CLI

- Provision, update, and manage cloud services
- Code generation
- Provision infrastructure as code
- Local testing / mocking
- Initialize existing projects
- Create additional environments

Amplify Framework



CLI

Installing and configuring the CLI

```
$ npm install -g @aws-amplify/cli
$ amplify configure
```

AWS Amplify CLI

API (REST and GraphQL)

Authentication

Functions

Hosting

Storage (files and database)

ML and AI

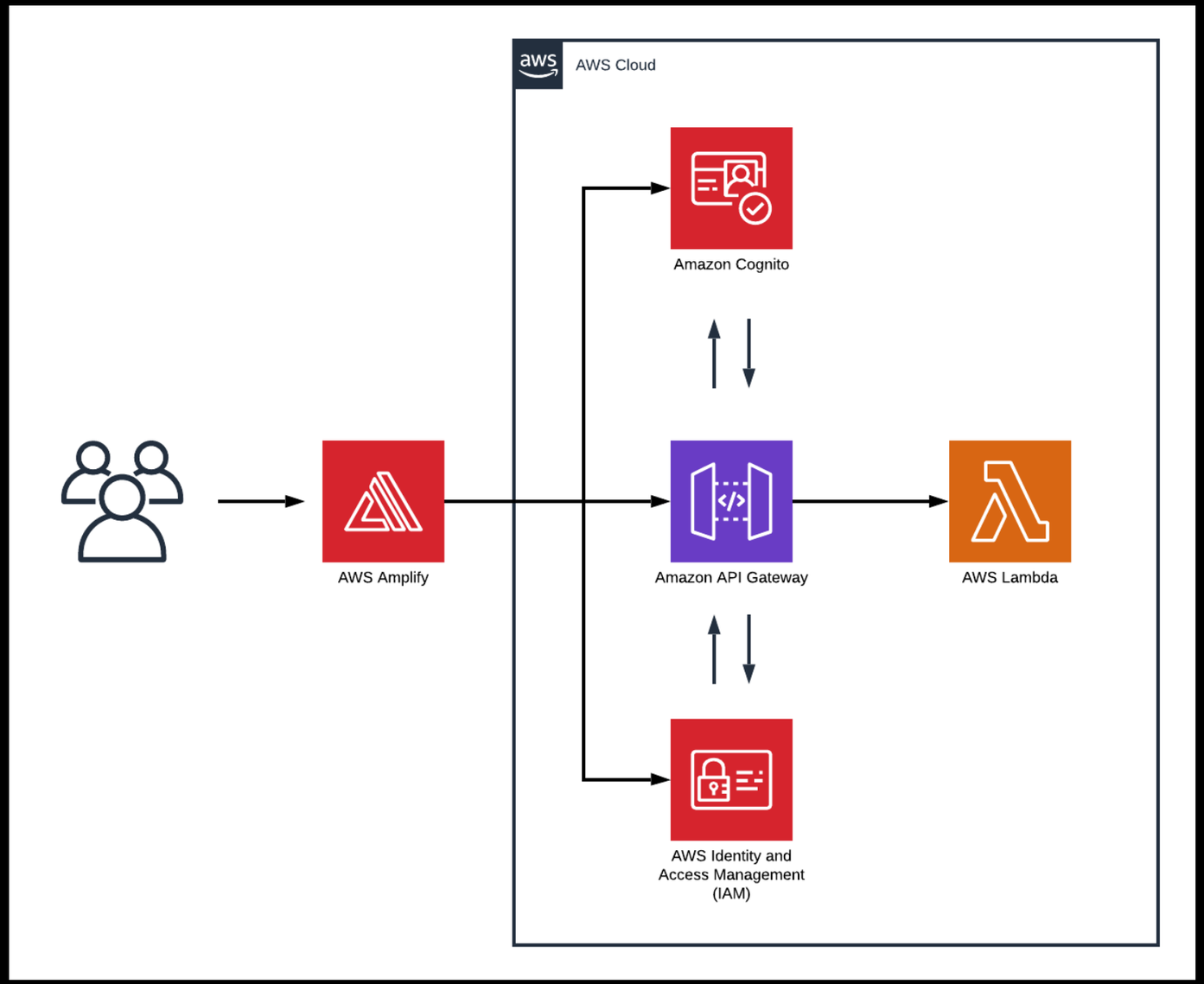
Analytics

Video

AWS Amplify CLI

API (REST)

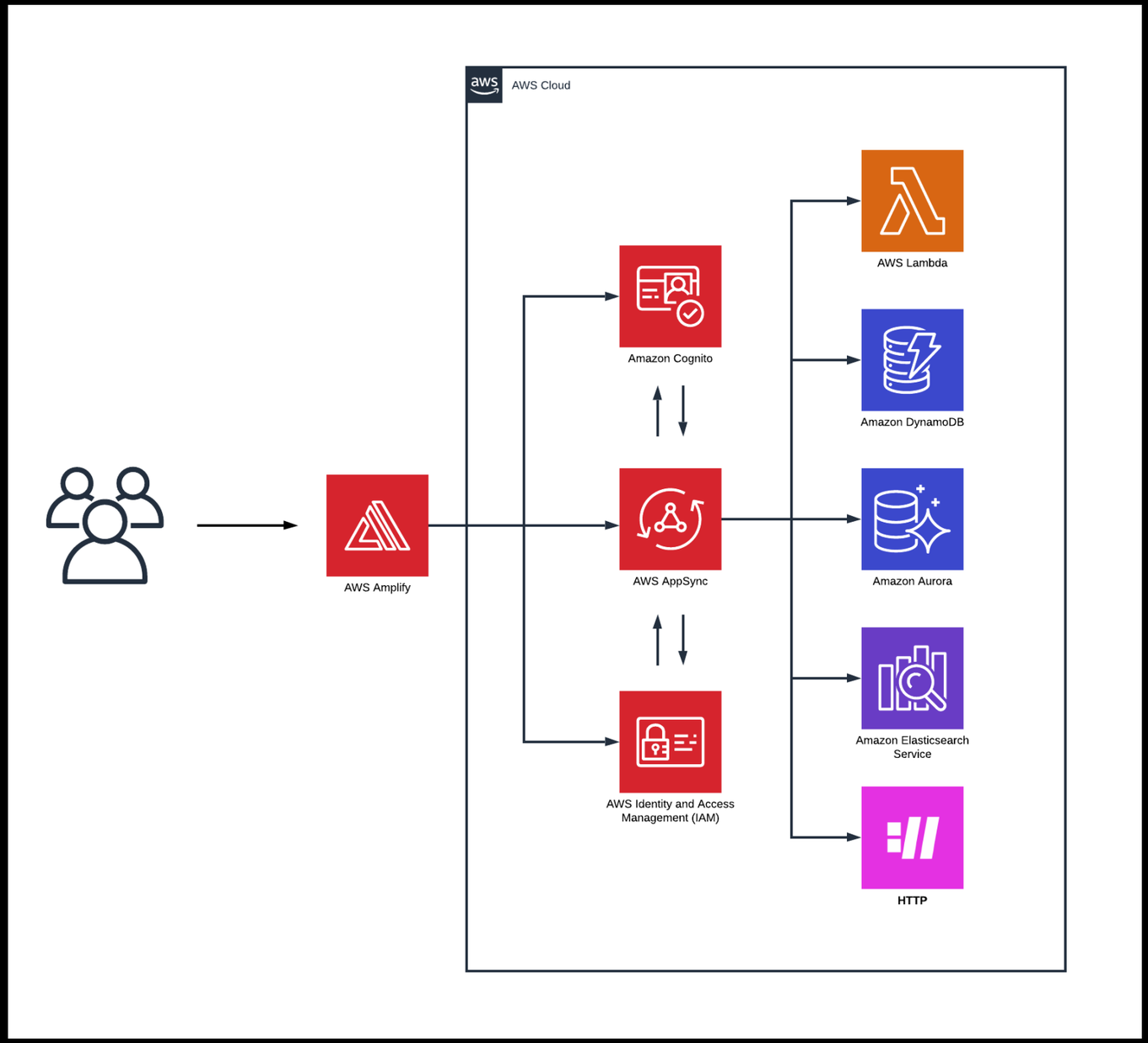
Amazon API Gateway +
AWS Lambda



AWS Amplify CLI

API (GraphQL)

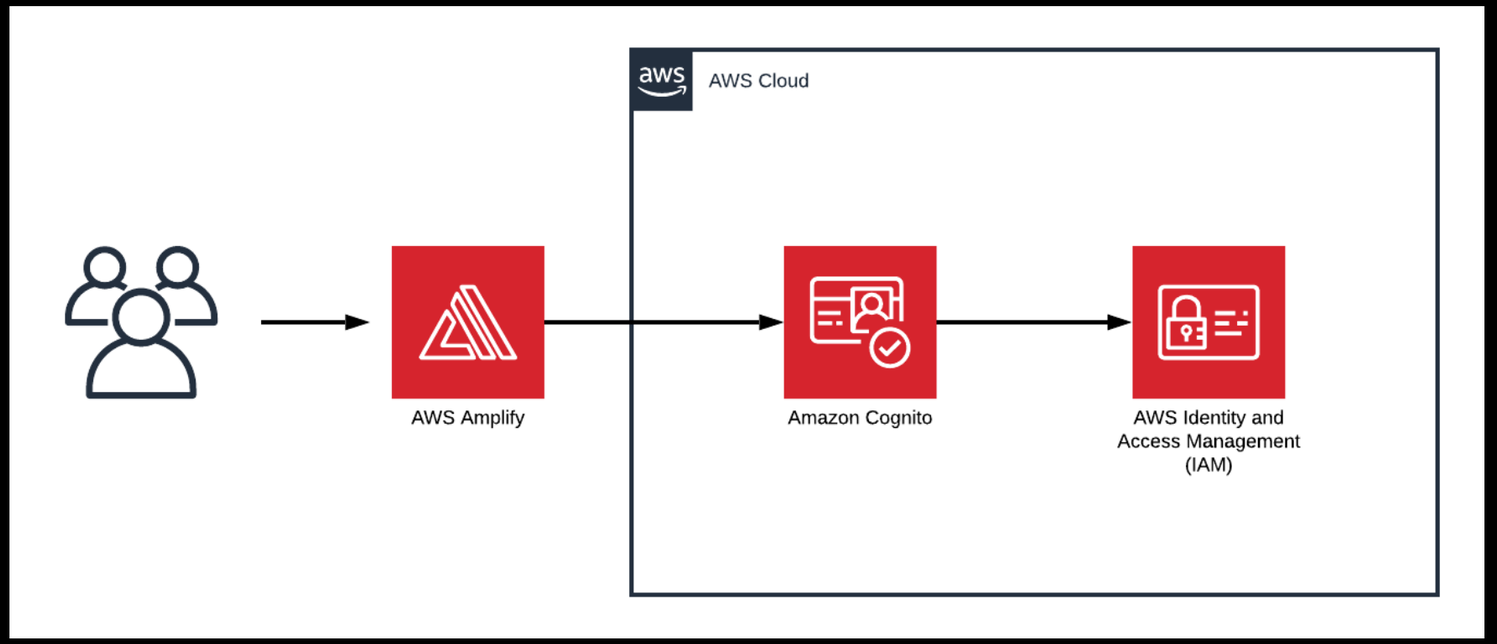
AWS AppSync
Amazon DynamoDB
AWS Lambda
Amazon Elasticsearch Service
Amazon Aurora Serverless



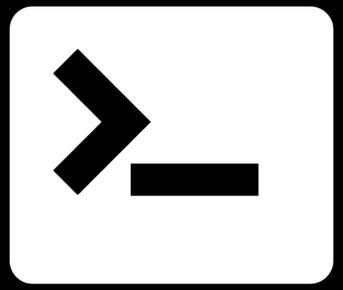
AWS Amplify CLI

Authentication

Amazon Cognito



AWS Amplify CLI

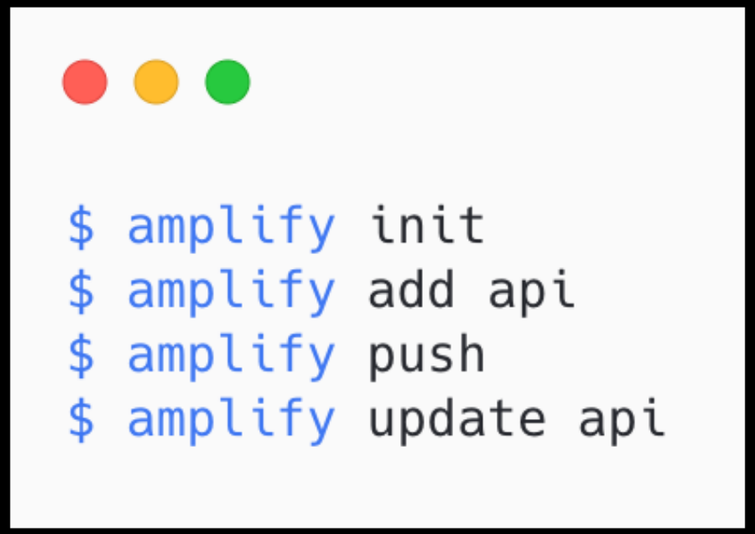


CLI

Usage

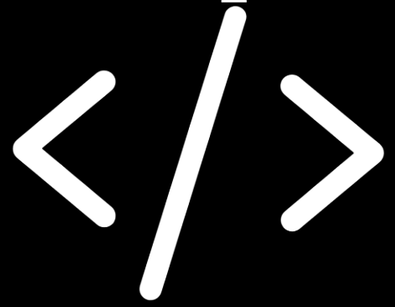
```
$ amplify init
$ amplify add api
$ amplify push
$ amplify update api
```

AWS Amplify CLI



- ✓ AWS CloudFormation stack
- ✓ AWS services
- ✓ Amplify folder (local)
  - CloudFormation configuration
  - Back-end code
- ✓ Local configuration file

Amplify client libraries

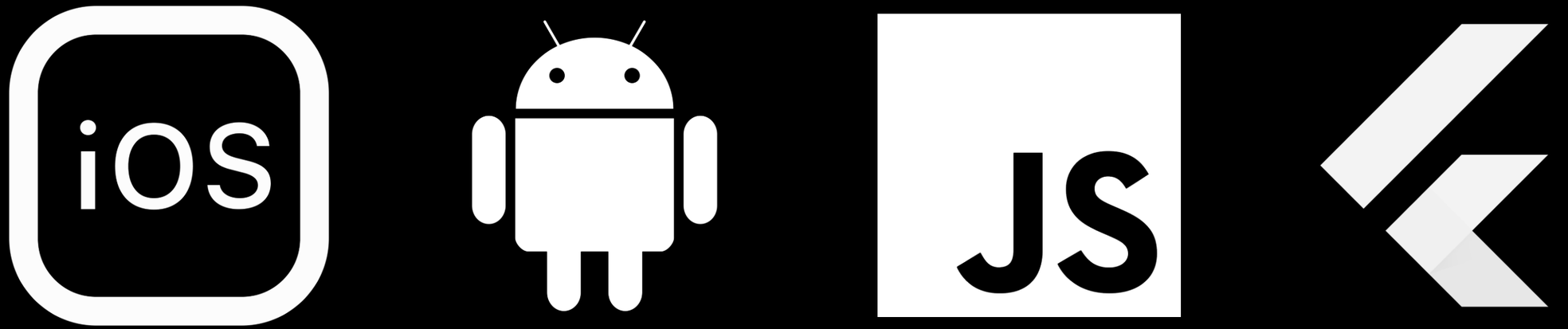




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Amplify client libraries



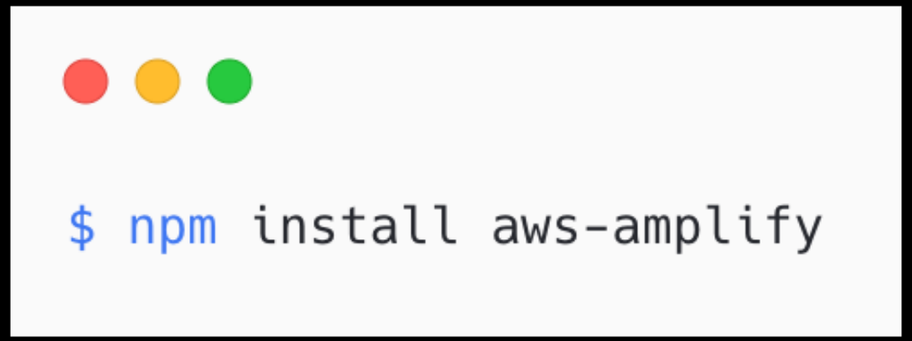
Platform-specific libraries optimized for interacting with AWS services from web and mobile clients

Amplify client libraries

WEB

JS

Installation



Amplify client libraries

WEB

JS

Usage

```
import { Storage } from 'aws-amplify';

const myImage = await Storage.get('my-image-key');
```

Amplify client libraries

IOS



Installation

```
target 'MyApp' do
  use_frameworks!

  pod 'Amplify'
  pod 'Amplify/Tools'
  pod 'AmplifyPlugins/AWSAPIPlugin'
  pod 'AmplifyPlugins/AWSDataStorePlugin'

end
```

Amplify client libraries

IOS



Usage

```swift
import Amplify

let dataString = "My Data"
let data = dataString.data(using: .utf8)!

Amplify.Storage.uploadData(key: "ExampleKey", data: data)
```

Amplify client libraries

ANDROID



Installation

```
# build.gradle (Project)

dependencies {
    # ...
    classpath 'com.amplifyframework:amplify-tools-gradle-plugin:1.0.1'
}
```

```
# build.gradle (Module: app)

dependencies {
    implementation 'com.amplifyframework:core:1.0.0'
    implementation 'com.amplifyframework:aws-datastore:1.0.0'
    implementation 'com.amplifyframework:aws-api:1.0.0'
}
```

Amplify client libraries

ANDROID



Usage

```
// onCreate()
Amplify.addPlugin(AWSCognitoAuthPlugin())
Amplify.addPlugin(AWSS3StoragePlugin())

// In your app
Amplify.Storage.downloadFile(
    "ExampleKey",
    File(applicationContext.filesDir.toString() + "/download.txt"),
    { result -> Log.i("MyAmplifyApp", "Successfully downloaded: " + result.getFile().name) },
    { error -> Log.e("MyAmplifyApp", "Download Failure", error) }
)
```

Amplify client libraries

FLUTTER



Installation

```
dependencies:
  flutter:
    sdk: flutter

  amplify_core: '<1.0.0'
  amplify_auth_cognito: '<1.0.0'
  amplify_analytics_pinpoint: '<1.0.0'
```

Amplify client libraries

FLUTTER



Configuration

```dart
import 'package:amplify_auth_cognito/amplify_auth_cognito.dart';
import 'amplifyconfiguration.dart';

void _configureAmplify() async {
  AmplifyAuthCognito authPlugin = AmplifyAuthCognito();
  amplifyInstance.addPlugin(authPlugins: [authPlugin]);
  await amplifyInstance.configure(amplifyconfig);
}
```

Amplify client libraries

FLUTTER



Usage

```
Map<String, dynamic> userAttributes = {
  "email": emailController.text,
};

SignUpResult res = await Amplify.Auth.signUp(
    username: data.name,
    password: data.password,
    options: CognitoSignUpOptions(
        userAttributes: userAttributes
    )
);
```

Amplify UI components

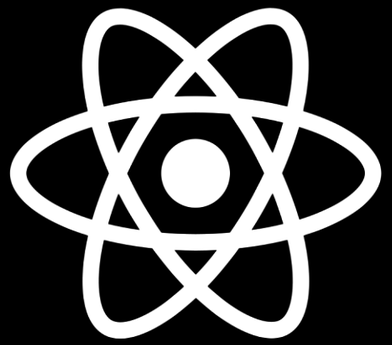


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Amplify UI components

FRAMEWORK SUPPORT



React and
React
Native



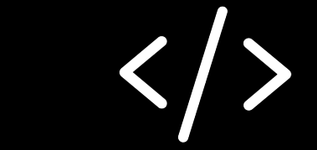
Angular and
Ionic



Vue

Amplify UI components

INSTALLATION



Authentication – AWS Amplify React

```
$ npm install @aws-amplify/ui-react
```

Amplify UI components

USAGE (REACT WEB)



Authentication – AWS Amplify React

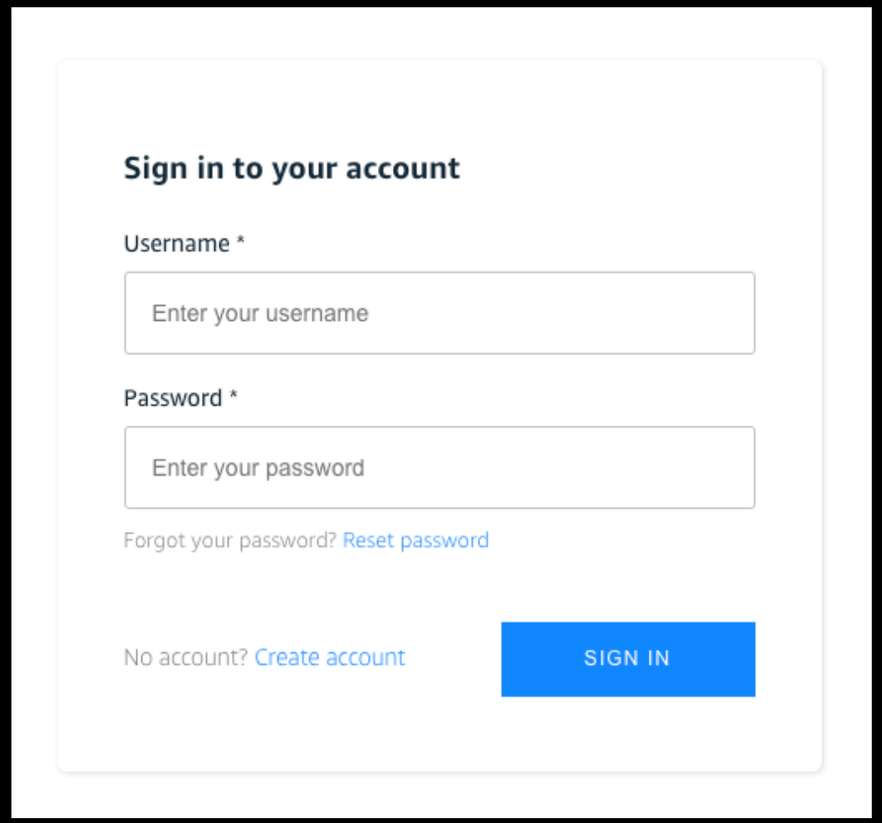
```
import { withAuthenticator } from '@aws-amplify/ui-react';

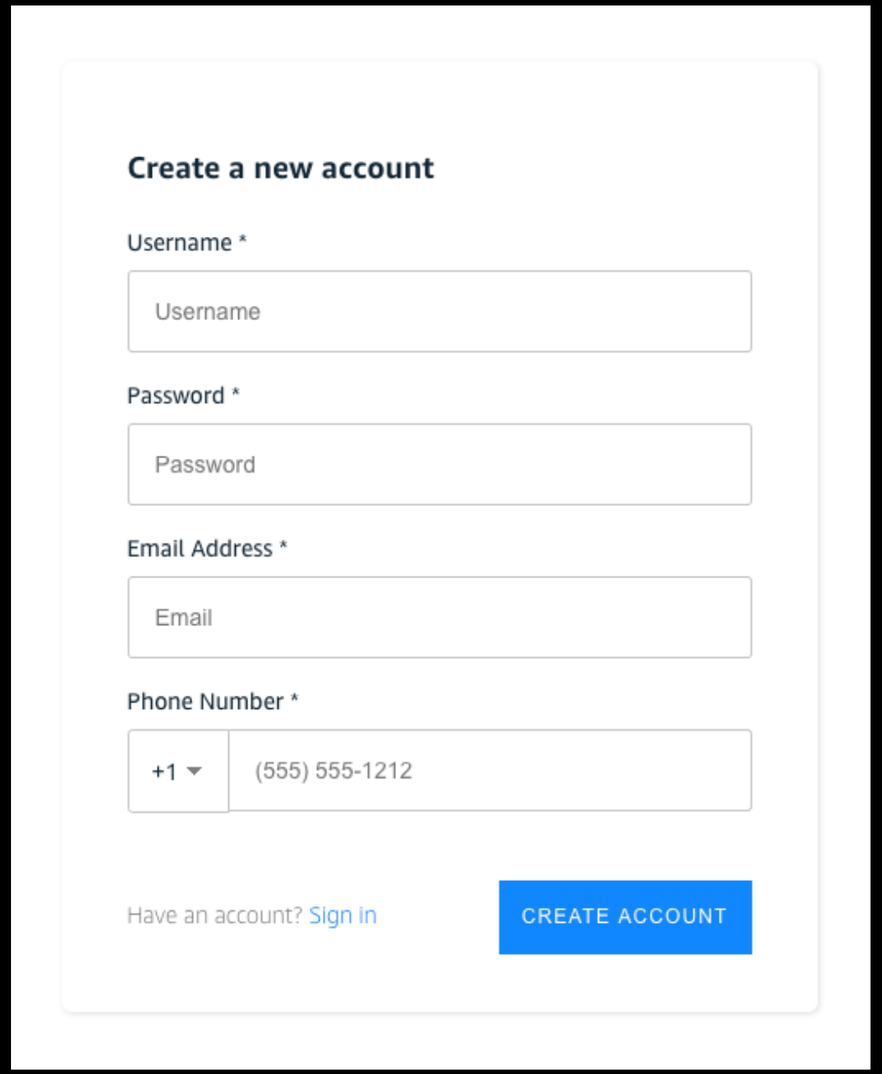
const App = () => {}

export default withAuthenticator(App);
```

Amplify UI components

USAGE (REACT WEB)





Amplify CLI Toolchain



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Amplify CLI Toolchain

- GraphQL Code Generation
- GraphQL Transform
- Lambda function code generation
- Local mocking and testing

Amplify CLI Toolchain

GRAPHQL TRANSFORM

@model
@connection
@auth
@http
@function
@key
@predictions
@searchable

Amplify CLI Toolchain

GRAPHQL TRANSFORM

@model



Amplify CLI Toolchain

GRAPHQL TRANSFORM

@model



- ✓ CRUD and list schema
- ✓ DynamoDB table
- ✓ Subscriptions
- ✓ Resolvers

Amplify CLI Toolchain

GRAPHQL TRANSFORM

@connection

```
type Todo @model {
  id: ID!
  name: String!
  completed: Boolean
  comments: [Comment] @connection
}

type Comment @model {
  id: ID!
  message: String!
}
```

Amplify CLI Toolchain

GRAPHQL TRANSFORM

@connection

```
type Todo @model {
  id: ID!
  name: String!
  completed: Boolean
  comments: [Comment] @connection
}

type Comment @model {
  id: ID!
  message: String!
}
```

Amplify Resources

Website: aws.amazon.com/amplify
Docs: docs.amplify.aws
Tutorials: docs.amplify.aws/start
Community: amplify.aws/community
Github: github.com/aws-amplify
Discord: www.discord.gg/amplify

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