Set up Amplify PubSub

The AWS Amplify PubSub category provides connectivity with cloud-based message-oriented middleware. You can use PubSub to pass messages between your app instances and your app's backend creating real-time interactive experiences.

PubSub is available with **AWS IoT** and **Generic MQTT Over WebSocket Providers**.

With AWS IoT, AWS Amplify's PubSub automatically signs your HTTP requests when sending your messages.

AWS IoT

The default export for PubSub will sign requests according to Signature Version 4.

Make sure that the `@aws-amplify/pubsub` package has the same version number as the `aws-amplify` package in your `package.json` file.

To use in your app, import `PubSub` from the root export path:

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```
import { Amplify} from 'aws-amplify';
import { PubSub } from '@aws-amplify/pubsub';
```

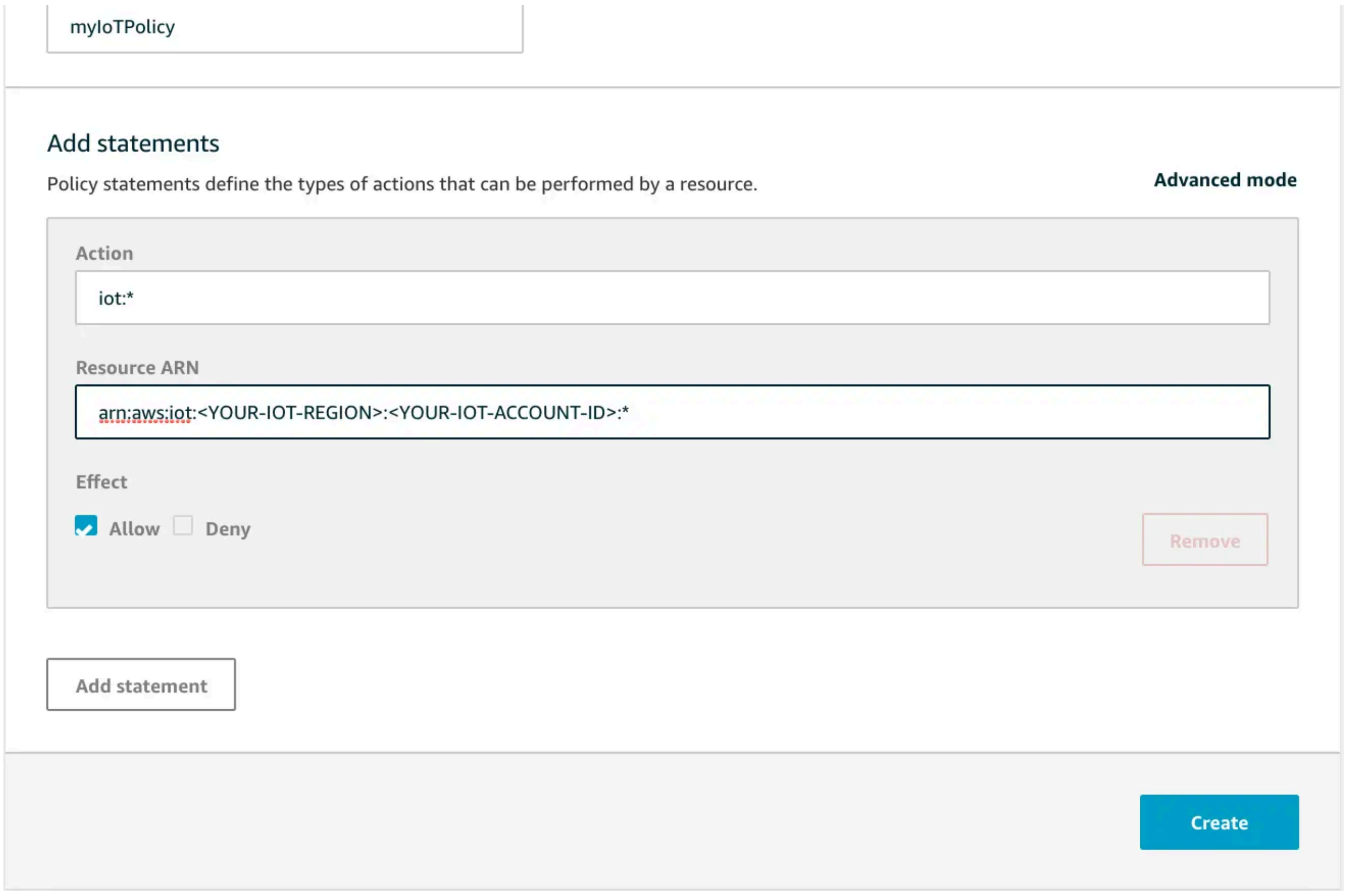
```
const pubsub = new PubSub({
  region: '<YOUR-IOT-REGION>',
  endpoint:
    'wss://xxxxxxxxxxxxx.iot.<YOUR-IOT-REGION>.amazonaws.com/mqt
});
```

Find your `aws_pubsub_endpoint` by logging onto your **AWS Console**, choosing **IoT Core** from the list of services and then choosing *Settings* from the left navigation pane.

Step 1: Create IAM policies for AWS IoT

To use PubSub with AWS IoT, you will need to create the necessary IAM policies in the AWS IoT Console, and attach them to your Amazon Cognito Identity.

Go to IoT Core and choose *Security* from the left navigation pane, and then *Policies* from the dropdown menu. Next, click *Create*. The following `myIoTPolicy` policy will allow full access to all the topics.


myIoTPolicy

Add statements

Policy statements define the types of actions that can be performed by a resource.

Action: iot:*

Resource ARN: arn:aws:iot:<YOUR-IOT-REGION>:<YOUR-IOT-ACCOUNT-ID>:*

Effect: [✓ Allow] Deny

Step 2: Attach your policy to your Amazon Cognito Identity

The next step is attaching the policy to your *Cognito Identity*.

You can retrieve the `Cognito Identity Id` of a logged in user with Auth Module:

```
import { fetchAuthSession } from 'aws-amplify/auth';
fetchAuthSession().then((info) => {
  const cognitoIdentityId = info.identityId;
});
```

Then, you need to send your *Cognito Identity Id* to the AWS backend and attach `myIoTPolicy`. You can do this with the following AWS CLI command:

Step 3: Allow the Amazon Cognito Authenticated Role to access IoT Services

For your Cognito Authenticated Role to be able to interact with **AWS IoT** it may be necessary to update its permissions, if you haven't done this before.
One way of doing this is to log to your **AWS Console**, select **CloudFormation** from the available services. Locate the parent stack of your solution: it is usually named `<SERVICE-NAME>-<CREATION_TIMESTAMP>` .
Select the **Resources** tab and tap on `AuthRole` **Physical ID**.
The IAM console will be opened in a new tab. Once there, tap on the button **Attach Policies**, then search `AWSIoTDataAccess` and `AWSIoTConfigAccess` , select them and tap on **Attach policy**.

If you are using Cognito Groups, the IAM role associated with that group also need the `AWSIoTDataAccess` and `AWSIoTConfigAccess` policies attached to it.

> *Failing to grant IoT related permissions to the Cognito Authenticated Role will result in errors similar to the following in your browser console:*
> `errorCode: 8, errorMessage: AMQJS0008I Socket closed.`

Keeping track of your pubsub instances

In a real-world application, the code that sets up a pubsub instance (`const pubsub = new PubSub(...)`) will be used in multiple places. This means that the configuration will be separate from where your application publishes (`pubsub.publish(...)`) or subscribes (`pubsub.subscribe(...)`).

If you already know all the connections when deploying your application, you can export singleton instances for other parts of your application to easily import and use.

Example

./src/utils/pubsub.ts:

./src/components/LatestMessage.tsx:

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```
import { useState, useEffect } from 'react';
import { pubsub } from '../utils/pubsub';

export function LatestMessage() {
  const [message, setMessage] = useState<string>("");
  useEffect(() => {
    pubsub.subscribe({topics: ['messages']}).subscribe({
        next: (data) => {
          setMessage(data.msg);
        }
    });
  }, [])
  return <>{message}</>
}
```

This means you will maintain a single connection to the target endpoint without needing to pass the `pubsub` instance as a property through layers of components.

Third Party MQTT Providers

Import `PubSub` from the mqtt specific export path

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```
import { PubSub } from '@aws-amplify/pubsub/mqtt';
```

Create a new instance for your endpoint and region in your configuration:

```
});
```

You can integrate any MQTT Over WebSocket provider with your app. Click here to learn more about MQTT Over WebSocket.

Only JSON serializable message payloads are currently supported for MQTT providers within PubSub. If you are attempting to use message payloads that are non-JSON serializable, consider transforming the payload into a format that aligns with the input type expected by MQTT.

NEXT
Subscribe and unsubscribe

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