AWS AMPLIFY CONSOLE

USER GUIDE

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Contents

What is the AWS Amplify Console?

The AWS Amplify Console is a continuous delivery and hosting service for modern web applications. The AWS Amplify Console simplifies the deployment of your application front end and backend. Connect to your code repository and your front end and backend are deployed in a single workflow, on every code commit. This ensures that your web application is only updated after the deployment is successfully completed, eliminating inconsistencies between your application front end and backend. AWS Amplify Console makes it easier for you to build, deploy, and host your mobile web applications, enabling you to quickly iterate on feedback and get new features to your users faster.

What are Modern Web Applications?

Modern web applications are constructed as single page web applications that package all application components into static files. Traditional client-server web architectures led to poor experiences--every button click or search required a round trip to the server, re-rendering the entire application. Modern web apps offer a native app-like user experience by serving the app front end, or user interface, efficiently to browsers as prebuilt HTML/JavaScript files that can then invoke backend functionality without reloading the page.

Modern web applications functionality is often spread across multiple places--such as databases, authentication services, front end code running in the browser, and backend business logic, or AWS Lambda functions, running in the cloud. This makes application deployments complex and time-consuming as developers need to carefully coordinate deployments across the front end and backend to avoid partial or failed deployments. The AWS Amplify Console simplifies deployment of the front end and backend in a single workflow.

AWS Amplify Console supports common Single Page App (SPA) frameworks (e.g. React, Angular, Vue.js, Ionic, Ember), as well as static-site generators like Gatsby, Eleventy, Hugo, VuePress, and Jekyll.

Amplify Console Features

With the Amplify Console, you can do the following:

- Connect your repository (GitHub, BitBucket, GitLab, and AWS CodeCommit), and the Amplify Console automatically detects the front end build settings along with any backend functionality provisioned with the Amplify CLI (command-line toolchain for creating serverless backends).
- Manage production and staging environments for your front end and backend by connecting new branches.

- Atomic deployments eliminate maintenance windows by ensuring that the web app is only updated when the entire deployment has finished. This eliminates scenarios where files fail to upload properly.
- Connect your custom domain. If you manage your domain in Amazon Route 53, the Amplify Console automatically connects the root (yourdomain.com), www subdomains (www.yourdomain.com), and branch (https://dev.yourdomain.com) subdomains.
- Get screen shots of your app rendered on different mobile devices to pinpoint layout issues.
- Set up rewrites and redirects to maintain SEO rankings.
- Password protect your web app so you can work on new features without making them publicly accessible.

Getting Started

In this walkthrough, you learn how to continuously build, deploy, and host a modern web app. Modern web apps include Single Page App (SPA) frameworks (for example, React, Angular, or Vue) and static-site generators (SSGs) (for example, Hugo, Jekyll, or Gatsby).

To get started, log in to the Amplify Console and choose **Get Started** under **Deploy**.

Setting Up Custom Domains

You can connect a custom domain purchased through domain registrars (for example, Amazon Route 53, GoDaddy, and Google Domains) to your app. When you deploy your web app with the Amplify Console, it is hosted at:

```
https://branch-name.d1m7bkiki6tdw1.amplifyapp.com
```

When you use a custom domain, users see that your app is hosted from a URL, such as the following:

```
https://www.awesomedomain.com
```

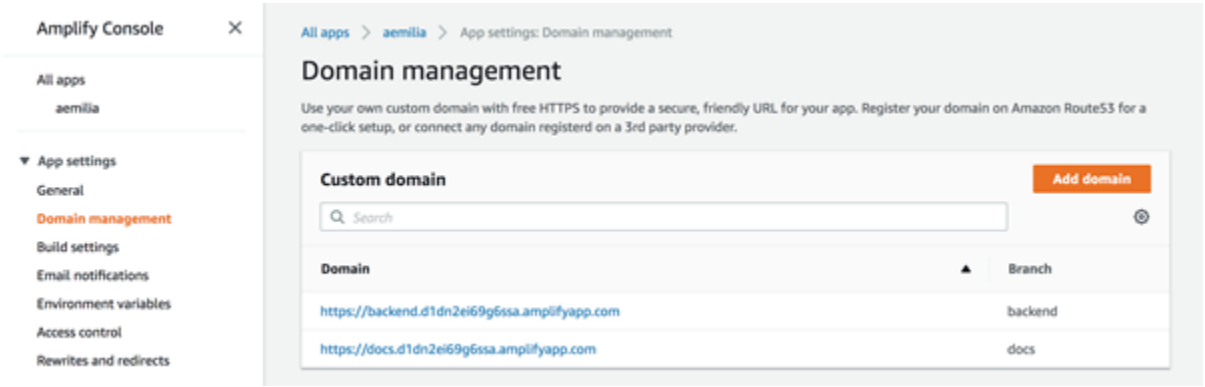
The Amplify Console issues an SSL certificate for all domains connected to your app so that all traffic is secured through HTTPS/2. The SSL certificate generated by Amazon Certificate Manager is valid for 30 days and renews automatically as long as your app is hosted with Amplify.

Topics

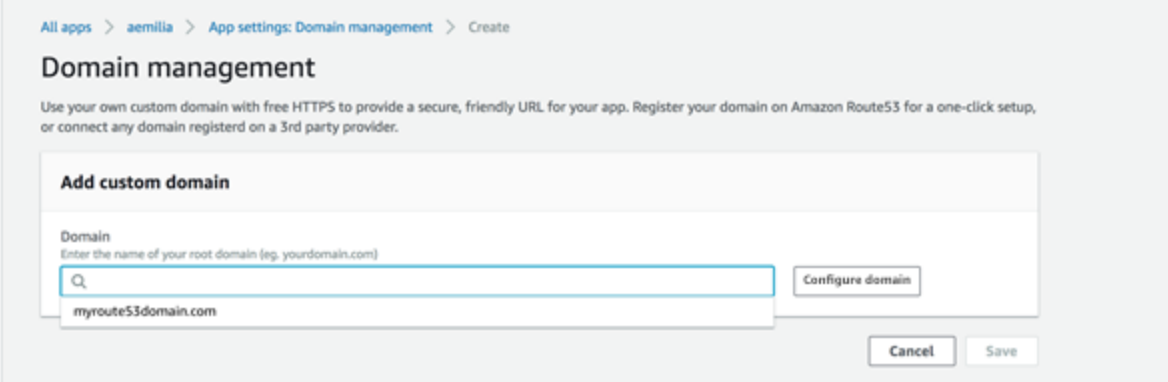
Adding a Custom Domain Managed in Amazon Route 53

After you deploy your app, you can add a custom domain that you manage using Amazon Route 53.

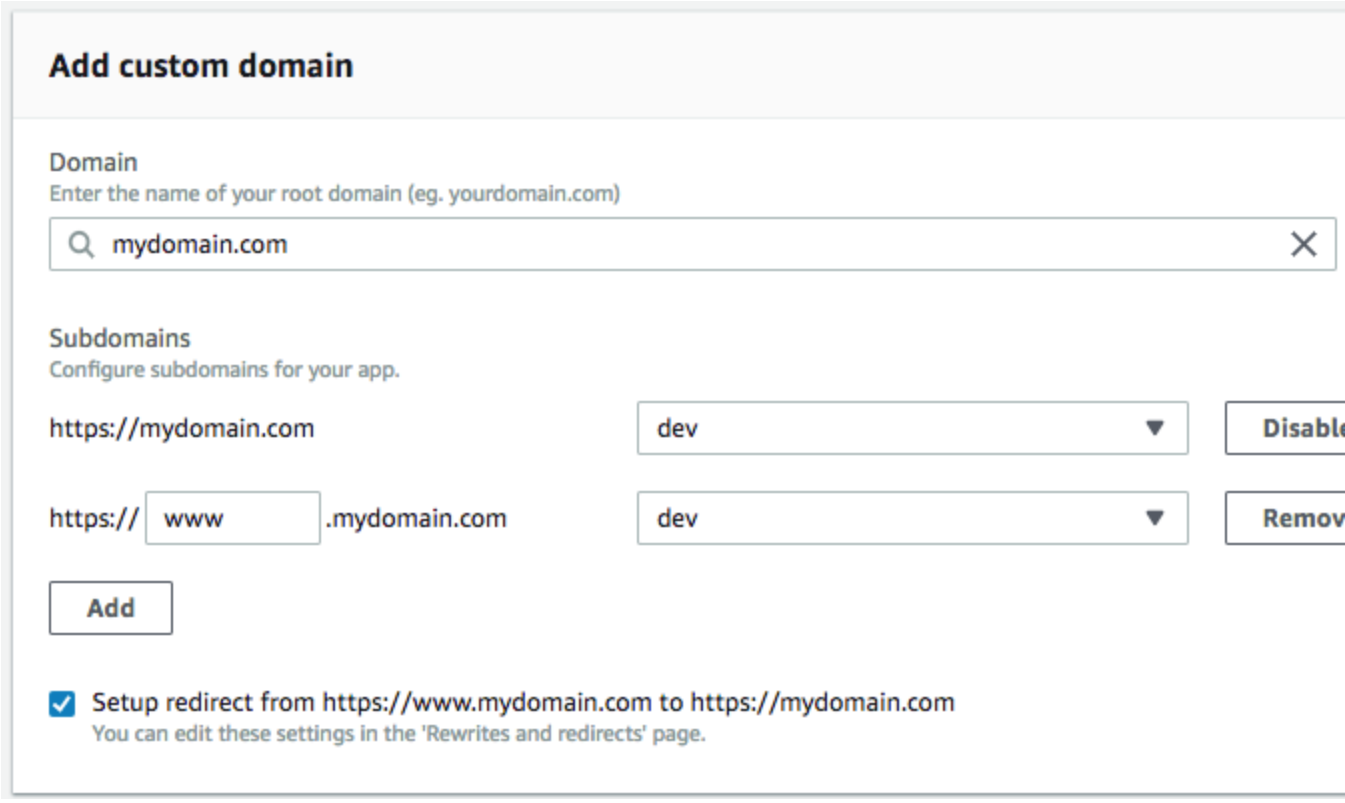
1. On the left navigation pane, choose **App Settings**, **Domain management**, and then choose **Add domain**.



2. In **Enter your root domain**, enter your root domain (*https://awesomedomain.com*). As you start typing, root domains that you manage in Amazon Route 53 appear in the list (*https://awesomedomain.com*). Select the domain you want to use and then choose **Configure Domain**.



3. By default, the Amplify Console automatically adds two entries for *https://www.myroute53domain.com* and *https://myroute53domain.com* with a redirect set up from the *www* subdomain to the root domain (you can change this by choosing **Rewrites and redirects** from the left menu). You can modify the default configuration if you want to add subdomains only, see: Connecting subdomains. Choose **Save** after configuring your domain.

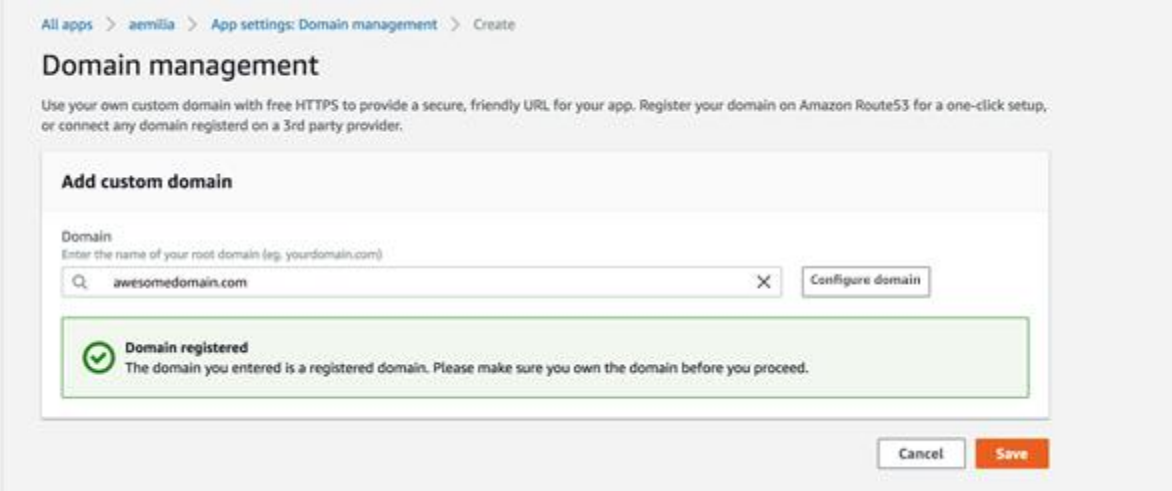


Note: It can take up to 24 hours for the DNS to propagate and to issue the SSL certificate. For more information about the status messages, see Associating a Domain.

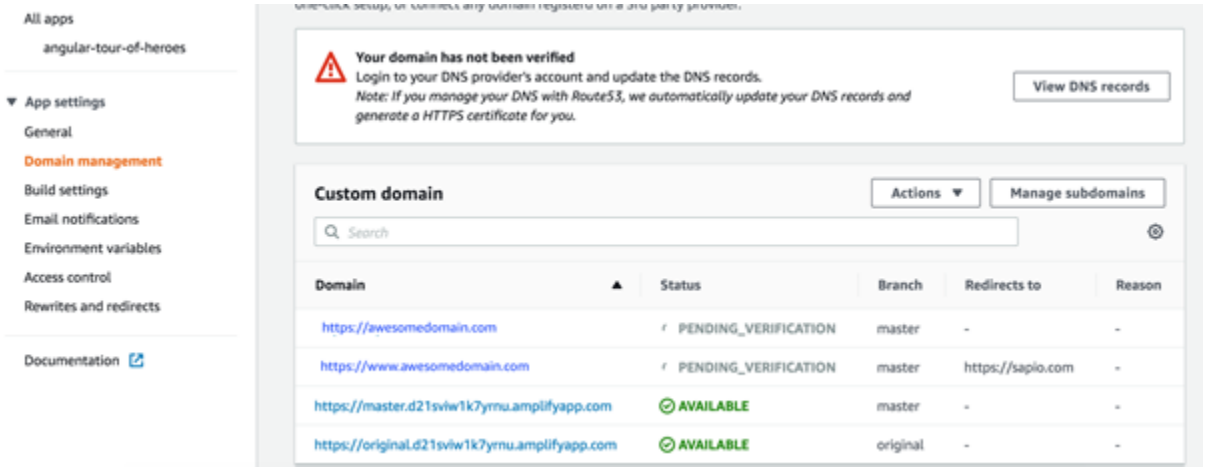
Adding a Custom Domain Managed by a Third-Party DNS Provider

After you deploy your app, you can add a custom domain that you manage using a third-party DNS provider if you don't use Amazon Route 53.

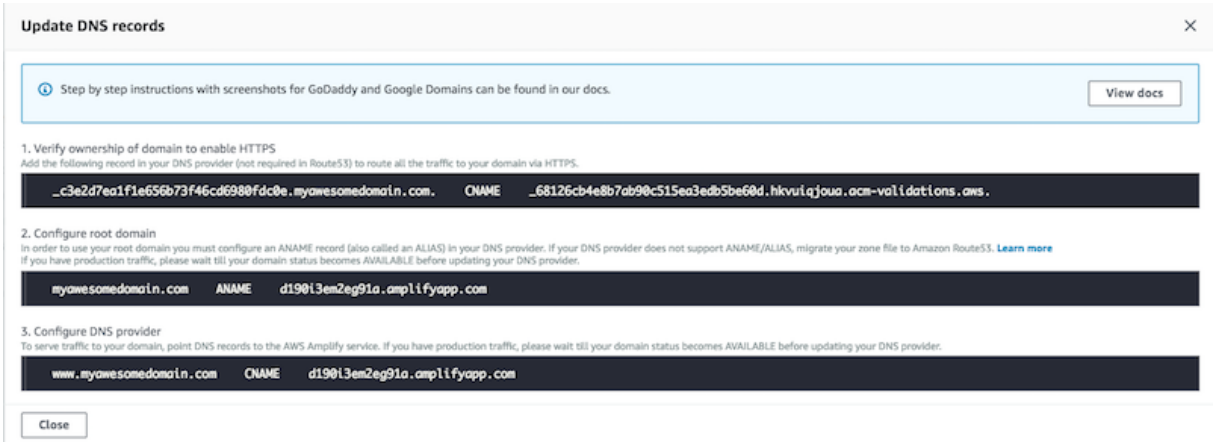
1. On the left navigation pane, choose **App Settings**, **Domain management**, and then choose **Add domain**.
2. In **Enter your root domain**, enter your root domain (*https://awesomedomain.com*) and then choose **Configure domain**. If the domain is registered, a green alert notifies you to proceed as long you are the owner of the domain. If the domain is available, purchase a domain at Amazon Route 53.



3. By default, the Amplify Console adds two entries for *https://www.awesomedomain.com* and *https://awesomedomain.com* with a redirect set up from the *www* subdomain to the root domain. You can modify the default configuration if you want to add subdomains only, see: Connecting subdomains. Choose **Save** after configuring your domain.
4. Because the domain is managed externally you must manually configure your DNS provider (for example, GoDaddy or Google domains). Choose **View DNS records** in the alert banner.



5. Update your DNS providers' CNAME and ALIAS records as follows. For GoDaddy and Google Domains, see the step-by-step instructions in Connecting to Third-Party Custom Domains.
    1. To generate a SSL certificate for your domain, Amplify Console needs to verify ownership. Configure a CNAME to point to the validation server. Once Amplify Console validates ownership of your domain, all traffic will be served using HTTPS/2.
    2. Configure CNAME record to point your subdomains (*https://*.awesomedomain.com*) to the amplifyapp domain. **NOTE**: If you have production traffic it is recommended you update your CNAME record after your domain status shows AVAILABLE.
    3. Configure ANAME/ALIAS record to point the root domain (*https://awesomedomain.com*) to your amplifyapp domain. ANAME records enable you to point the root of your domain to a hostname. For DNS providers that do not have ANAME/ALIAS support, we strongly recommend migrating your DNS to Amazon Route 53. NOTE: If you have production traffic it is recommended you update your ANAME record after your domain status shows AVAILABLE.*

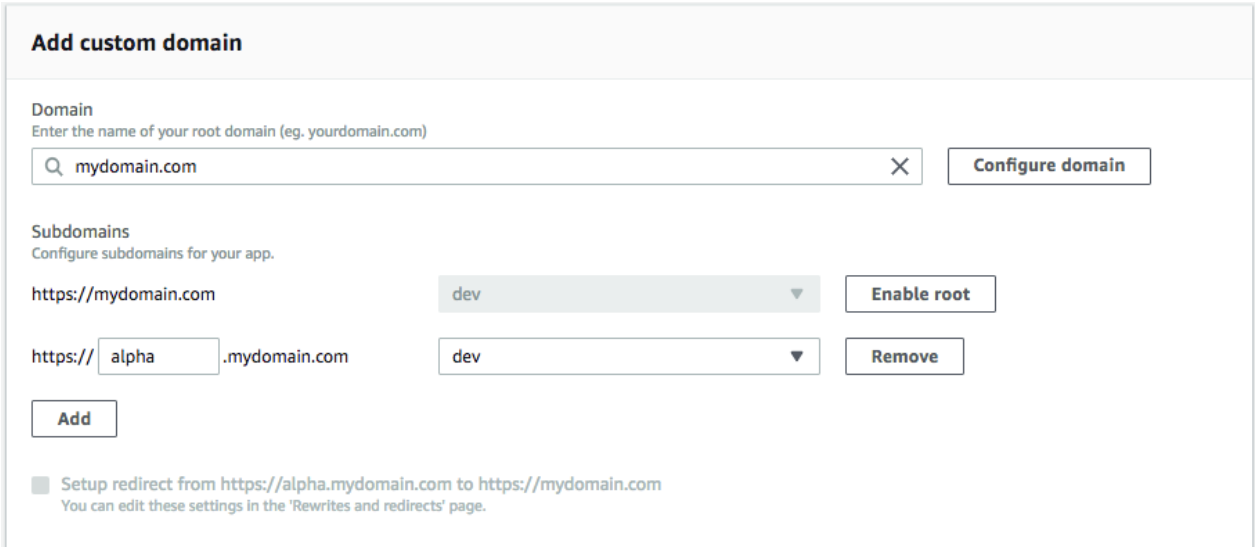


Important: Verification of domain ownership and DNS propagation for third-party domains can take up to 48 hours. For more information about status messages, see Associating a Domain.

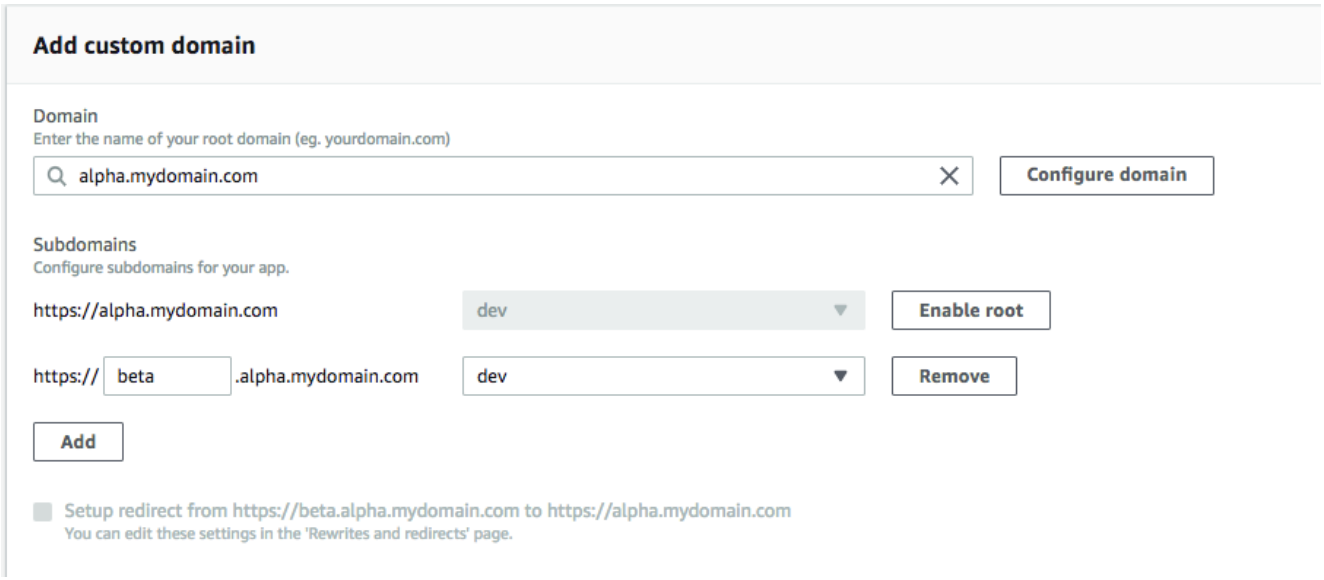
Adding Subdomains

A subdomain is the part of your URL that appears before your domain name (for example, *www*.amazon.com or *aws*.amazon.com).

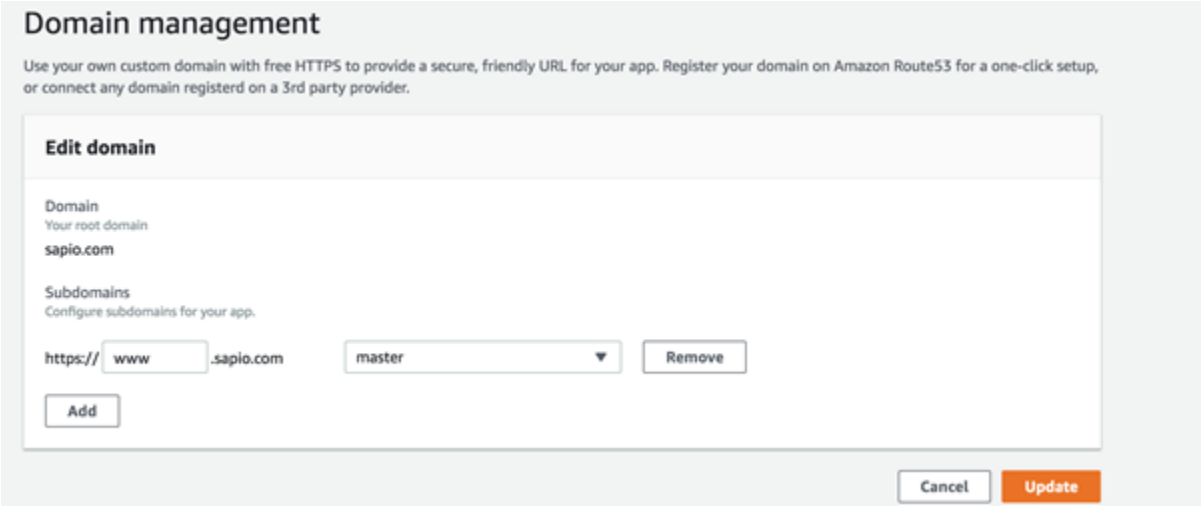
1. **Add a subdomain only**: If you already have a production website, you might only want to connect a subdomain (eg *https://alpha.mydomain.com*). You can do this by choosing **Exclude root** and modifying the subdomain to *alpha* as shown below.



2. **Add a multi-level subdomain**: You might want to connect a multi-level subdomain (eg *https://beta.alpha.mydomain.com*). You can do this by entering *alpha.mydomain.com* in the domain search bar, choosing **Exclude root**, and modifying the subdomain to *beta* as shown below.



3. **Manage subdomains** After adding your domain, you might want to add more subdomains. Choose **Manage subdomains** from the Domain management screen and edit your subdomains.



Custom Domain status

When you are associating a domain with your Amplify app deployment, you see the following status messages:

1. **Creating** - AWS Amplify Console is creating required resources for setting up the custom domain.
2. **Requesting certificate** - AWS Amplify Console is requesting a SSL certificate from Amazon Certificate Manager for your site.

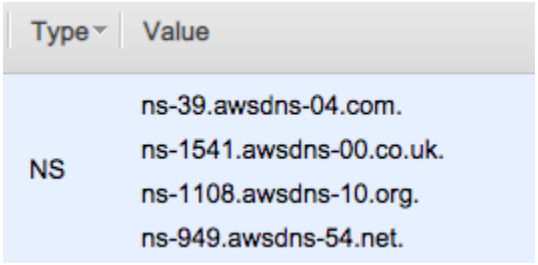
1. **Pending verification** - Before issuing an SSL certificate, Amplify Console must verify that you are the owner of the domain. For domains managed by Route53, we will automatic update the DNS verification record. For domains managed outside of Route53, you will need to manually add the displayed DNS verification record into your domain's DNS provider. Learn more.
2. **Pending deployment** - After domain verification, the DNS is propagated globally to all 144 points of presence of our CDN.
3. **Available** - The domain is successfully associated with your app. For domains managed outside of Route53, you will need to manually add the DNS records provided in the console into your domain's DNS provider.

Troubleshooting Guide

This guide will help you troubleshoot issues regarding the setup of a custom domain in the AWS Amplify Console.

Technical Terms

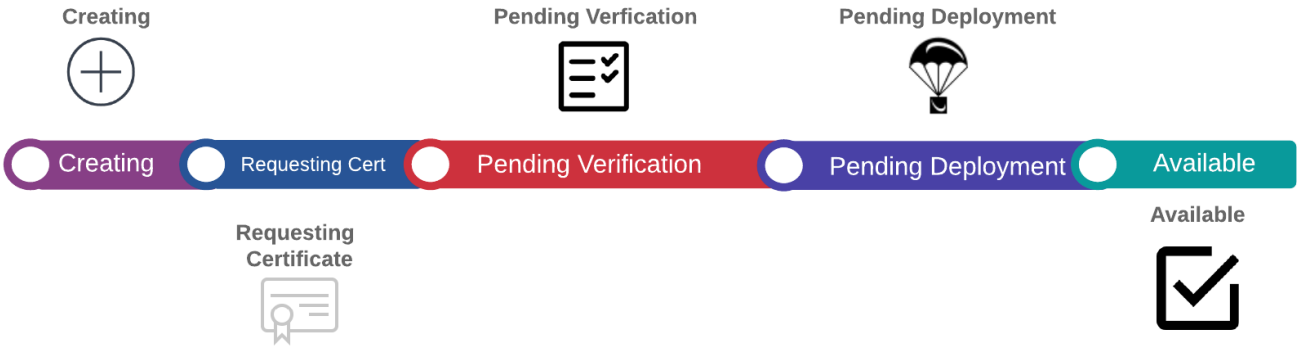
1. **CNAME** - A CNAME (Canonical Record Name) is a type of DNS record which allows you to mask the domain for a set of webpages and make them appear as though they are located elsewhere. CNAMES point a subdomain to a Fully Qualified Domain name (FQDN). For example, we can create a new CNAME record to map the subdomain **www**.myawesomesite.com to the FQDN domain **branch-name.d1m7bkiki6tdw1.amplifyapp.com** assigned to our App.
2. **ANAME** - An ANAME record is like a CNAME record, but at the root level. An ANAME will point the root of your domain to a FQDN. That FQDN will actually point to an IP address.
3. **Nameserver** - A Nameserver is a server on the internet specialized in handling queries regarding the location of a domain name's various services. If you have your domain setup in AWS Route53, you will have a list of nameservers assigned to your domain.



Type	Value
NS	ns-39.awsdns-04.com. ns-1541.awsdns-00.co.uk. ns-1108.awsdns-10.org. ns-949.awsdns-54.net.

Setting up Custom Domains in AWS Amplify Console

When you create a new domain on the Amplify Console, there are a number of steps which need to happen before you can view your app via your custom domain.



1. **Creating** - AWS Amplify Console is creating required resources for setting up the custom domain.
2. **Requesting certificate** - AWS Amplify Console is requesting a SSL certificate from Amazon Certificate Manager for your site.
3. **Pending Verification** - Before issuing an SSL certificate, Amplify Console must verify that you are the owner of the domain. For domains managed by Route53, we will automatic update the DNS verification record. For domains managed outside of Route53, you will need to manually add the displayed DNS verification record into your domain's DNS provider.
4. **Available** - The domain is successfully associated with your app. For domains managed outside of Route53, you will need to manually add the DNS records provided in the console into your domain's DNS provider.

Understanding DNS Verification

DNS stands for Domain Name System, and is commonly referred to being a phone book, translating human-readable names (domains) to computer-friendly addresses (IP Addresses).

When you type **https://google.com** in the browser, a lookup is done in the DNS provider to find the IP Address of server which hosts the website.

DNS providers contain records of domains and their corresponding IP Addresses. Here are the most commonly used DNS records.

1. **A record** - points the root domain or subdomain to an IP Address
2. **CNAME record** - Points a subdomain to a FQDN (Fully Qualified Domain Name)
3. **NS record** - Points to servers which will lookup your domain details

There are a number of free services on the internet you can use to verify your DNS records. For example, whatsmydns.net.

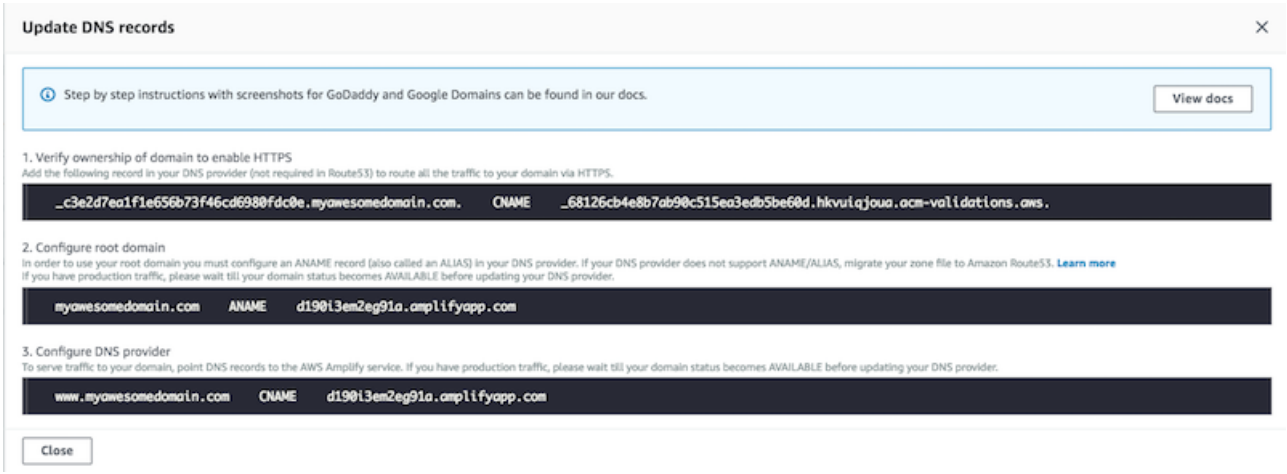
The Amplify Console uses a CNAME record to verify that you own your custom domain. If you host your domain with AWS Route53, verification is done on your behalf. However, if you host

your domain with a Third party, you'll have to manually go into your DNS settings and add a new CNAME record.

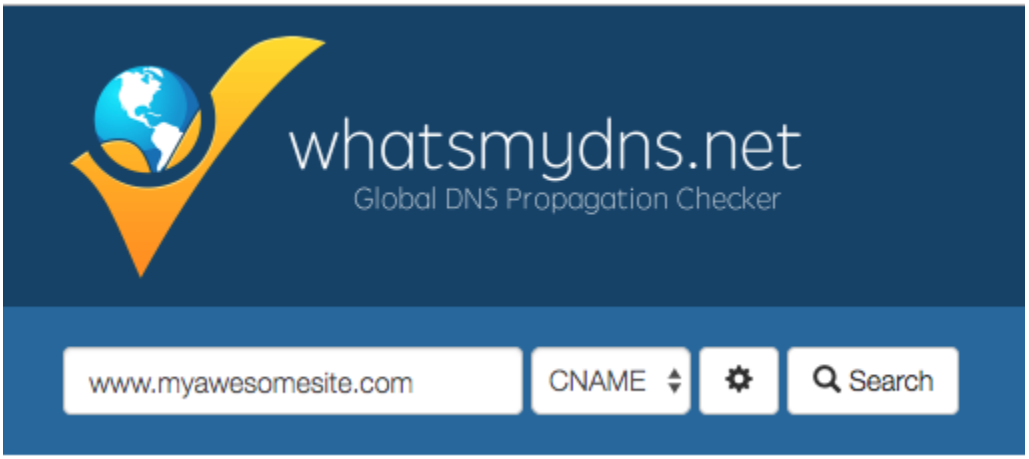
FAQ

1. **How do I verify if my CNAME resolves?** - You can use a tool like dig or a free website like whatsmydns.net to verify that your CNAME records are resolving.

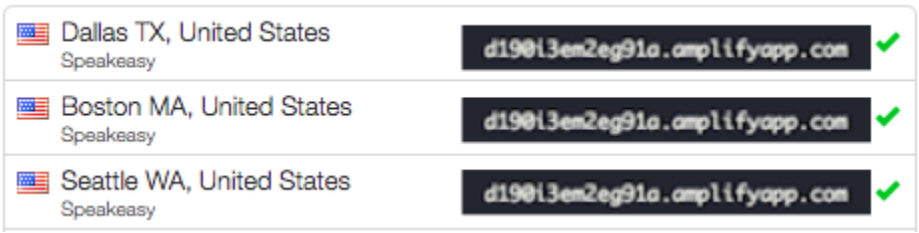
   Let's say you were shown this screen after you created your custom domain.



   The documentation provided here docs.aws.amazon.com will show you how to update your DNS records. You can then verify these records at whatsmydns.net.



   When you click search, you should that the results show that your CNAME is resolving correctly.



You can similarly check the other DNS records.

2. **My domain hosted with a third party is stuck in Pending Verification state** - The first thing you'll want to do is to verify if your CNAME records are resolving. See previous step for instructions. If you CNAME records are not resolving, then you should confirm that the CNAME entry exists in the your DNS Provider.

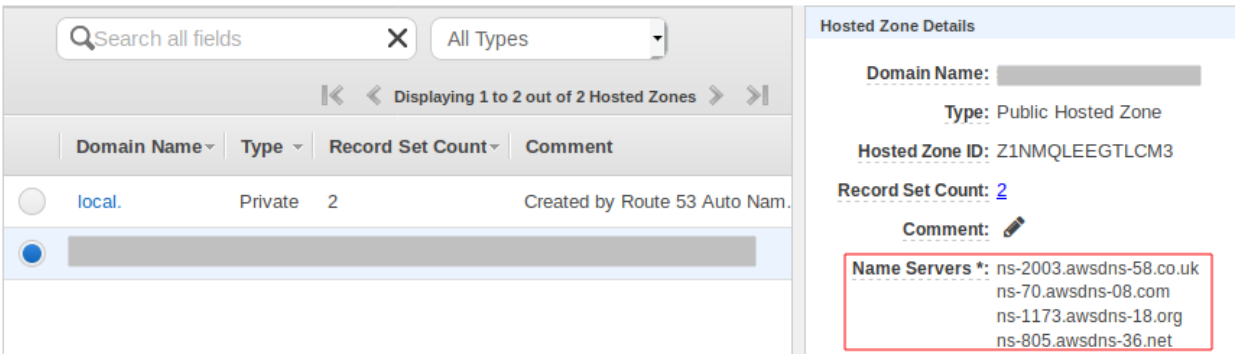
```
Note: If you added or updated your CNAME records a few hours after you
created your app, this will most likely cause your app to get stuck in
the pending verification state. It is important that you update your
CNAME records as soon as you create your custom domain.
```

Once your app is created in the Amplify Console, your CNAME records are checked every few minutes to determine if it resolves. If it doesn't resolve after an hour, the check is made every few hours which can lead to a delay in your domain being ready to use.

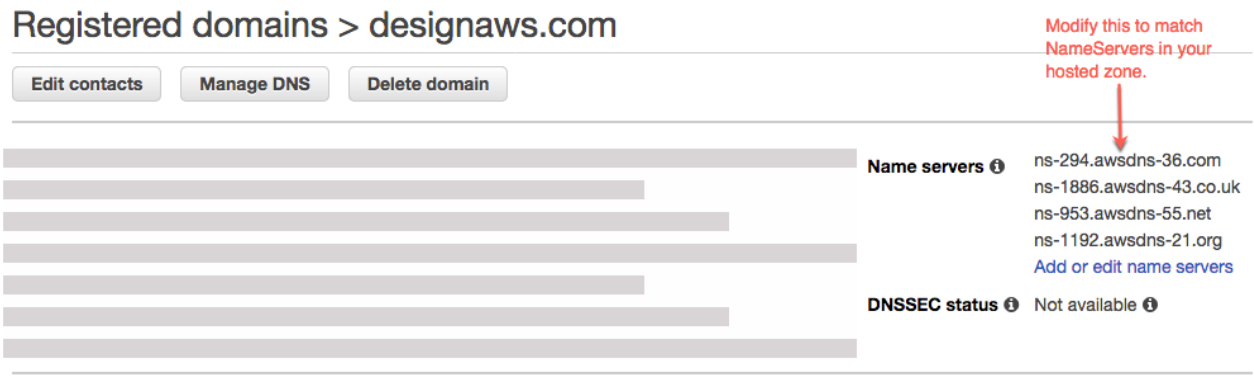
Lastly, if you have confirmed that the CNAME records exists, then there might be an issue with your DNS provider. You can either contact the DNS provider to diagnose why the DNS verification CNAME is not resolving or migrate your DNS to Route53.

6. **My domain hosted with AWS Route53 is stuck in Pending Verification state**

If you transferred your domain to AWS Route53 then it's possible that your domain has different nameservers then those issued by the Amplify Console when your app was created. Login to the Route53 console, choose **Hosted Zones** from the left navigation, and pick the domain you are connecting. Record the nameserver values.



Next, choose **Registered domains** from the left navigation. Ensure the nameservers on the registered domain screen match what you copied from the Hosted Zone.

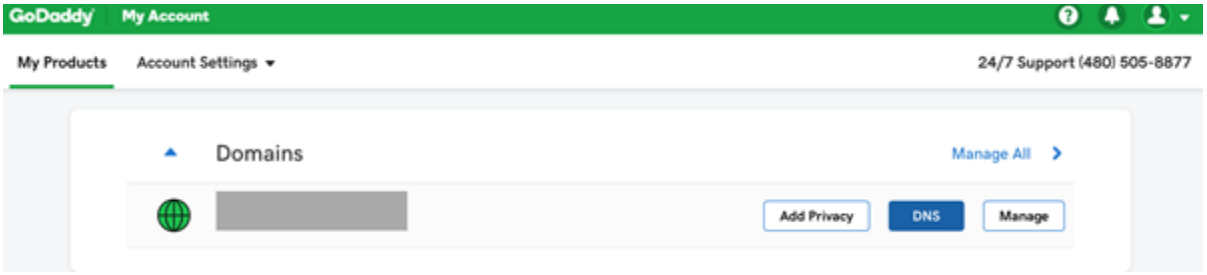


If this did not resolve the issue, please email aws-amplify-customer@amazon.com.

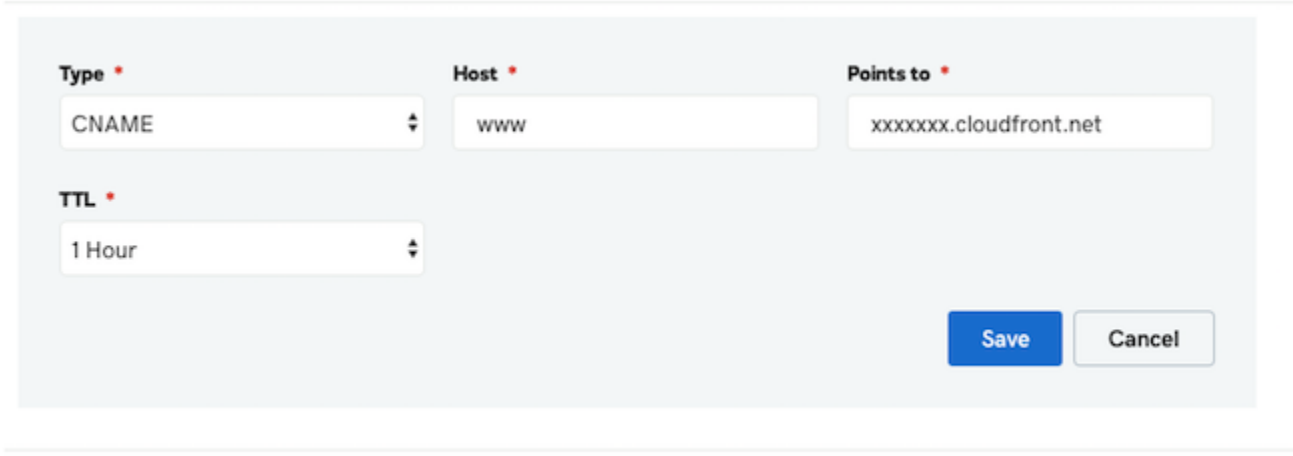
Connecting to Third-Party Custom Domains

Connecting to a GoDaddy Domain

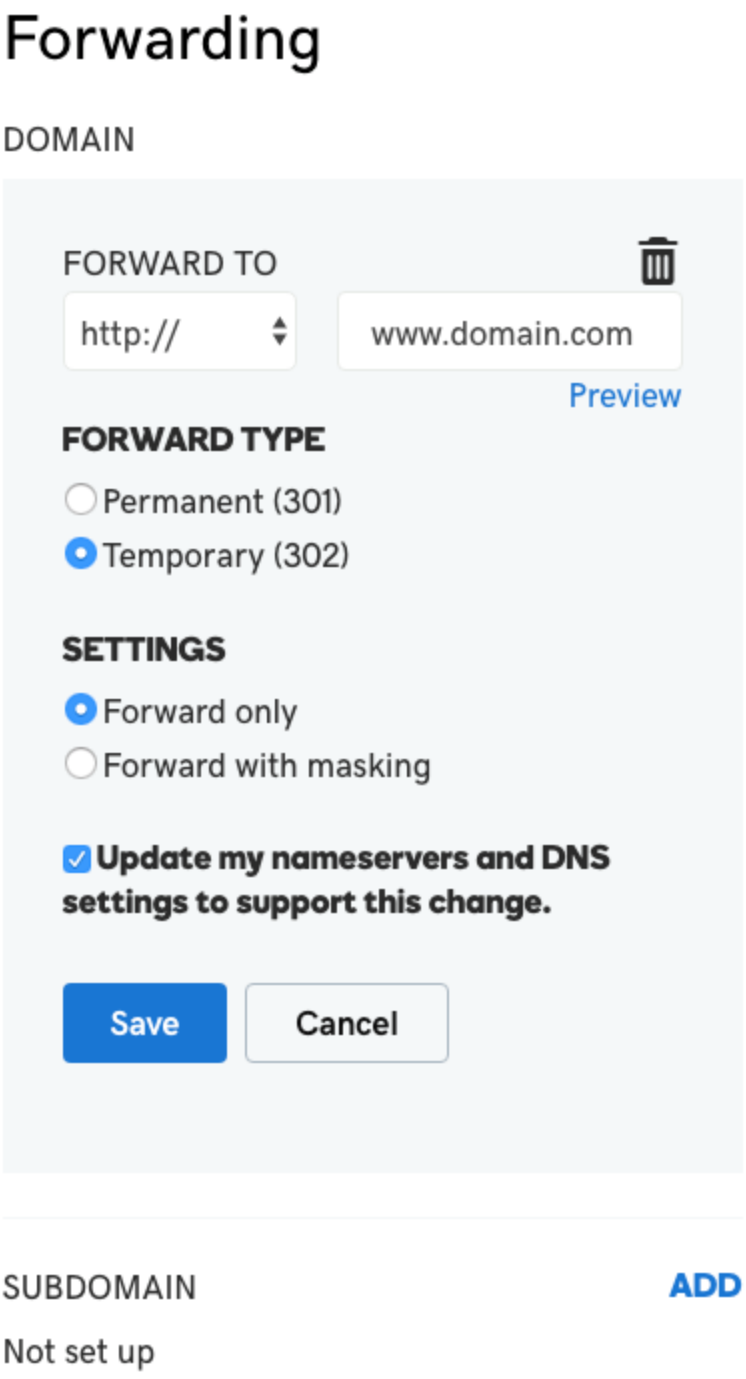
1. Follow the instructions to add a domain for third-party providers.
2. Log in to your account at GoDaddy and choose **DNS**.



3. Add CNAME records to to point your subdomains to the Amplify domain, and another CNAME record to point to Amazon Certificate Manager's validation server. A single validated ACM generates an SSL certificate for your domain. Make sure you only enter the subdomain (for example, *) in **Host** as shown below (don't enter yourdomainname.com).



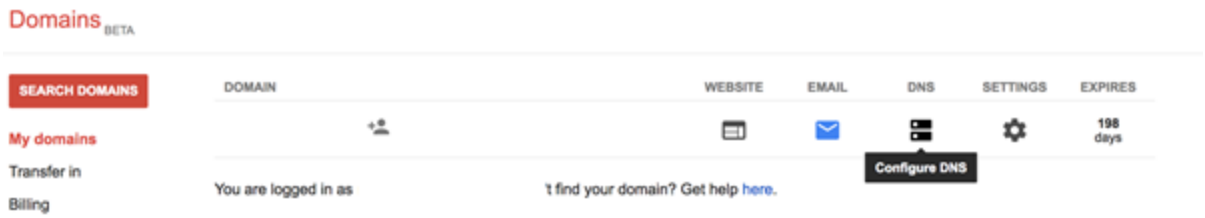
GoDaddy doesn't support ANAME/ALIAS records. For DNS providers that don't have ANAME/ALIAS support, we strongly recommend migrating your DNS to Amazon Route 53. If you want to keep your current provider and update the root domain, add **Forwarding** and set up a domain forward. In **Forward to**, enter the information as shown following:



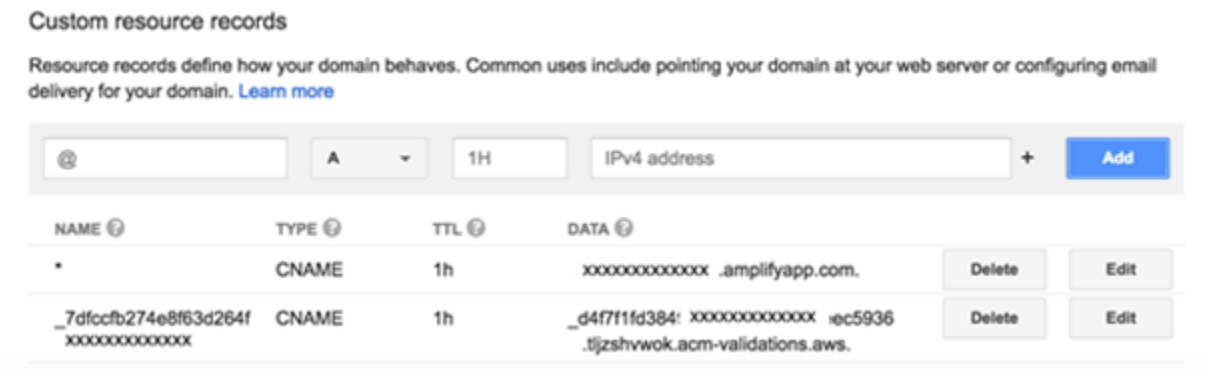
Connecting to a Google Domain

1. Follow the instructions to add a domain for third-party providers.

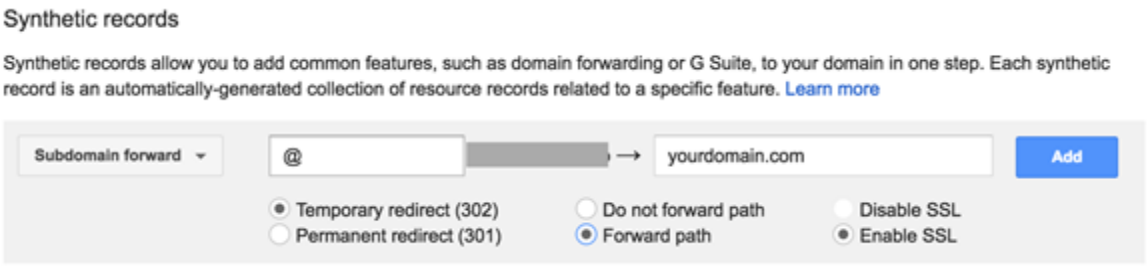
2. Log in to your account at https://domains.google and choose **DNS**.



3. In **Custom resource records**, enter CNAME records that you want to point all subdomains (*https://*.awesomedomain.com*) to the amplifyapp domain, and another CNAME record to point to Amazon Certificate Manager's validation server. A single validated ACM generates an SSL certificate for your domain.



Google domains don't support ANAME/ALIAS records. For DNS providers that don't have ANAME/ALIAS support, we strongly recommend migrating your DNS to Amazon Route 53. If you want to keep your current provider and update the root domain, add a **Synthetic Record**, and set up a **Subdomain Forward**. In **Subdomain**, enter the **@** symbol and then choose *Forward path* as shown following:



Configuring Build Settings

The Amplify Console automatically detects the front end framework and associated build settings by inspecting the package.json file in your repository. You have the following options:

- Save the build settings in the Amplify Console - The Amplify Console autodetects build settings and saves it so that they can be accessed via the Amplify Console. These settings are applied to all of your branches unless there is a YML file found in your repository.
- Save the build settings in your repository - Download the amplify.yml file and add it to the root of your repository (or root of the app folder for monorepos).

You can edit these settings in the Amplify Console by choosing **App Settings>Build settings**. These build settings are applied to all the branches in your app, except for the branches that have a YML file saved in the repository.

YML Specification Syntax

The build specification YML contains a collection of build commands and related settings that the Amplify Console uses to run your build. The YML is structured as follows:

```
version: 1.0
env:
  variables:
      key: value
backend:
  phases:
    preBuild:
      commands:
        - *enter command*
    build:
      commands:
        - *enter command*
    postBuild:
        commands:
        - *enter command*
frontend:
  phases:
    preBuild:
      commands:
        - cd react-app
        - npm ci
    build:
      commands:
        - npm run build
  artifacts:
    files:
        - location
        - location
    discard-paths: yes
    baseDirectory: location
  cache:
    paths:
        - path
        - path
  customHeaders:
   - pattern: 'file-pattern'
     headers:
     - key: 'custom-header-name'
```

```
      value: 'custom-header-value'
    - key: 'custom-header-name'
      value: 'custom-header-value'
```

- **version** - Represents the Amplify Console YML version number.
- **env** - Add environment variables to this section. You can also add environment variables using the console.
- **backend** - Run Amplify CLI commands to provision a backend, update Lambda functions, or GraphQL schemas as part of continuous deployment. Learn how to deploy a backend with your frontend.
- **frontend** - Run frontend build commands.
- **Both the frontend and backend have three phases that represent the commands run during each sequence of the build.**
    - **preBuild** - The preBuild script runs before the actual build starts, but after we have installed dependencies.
    - **build** - Your build commands.
    - **postBuild** - The post-build script runs after the build has finished and we have copied all the necessary artifacts to the output directory.
- **artifacts>base-directory** - The directory in which your build artifacts exist.
- **artifacts>files** - Specify files from your artifact you want to deploy. **/* is to include all files.
- **customHeaders** - Custom header rules set on deployed files. See custom headers.

Branch-Specific Build Settings

You can use bash shell scripting to set branch-specific build settings. For example, the following script uses the system environment variable *$AWS_BRANCH* to execute one set of commands if the branch name is *master* and a different set of commands if the branch name is *dev*.

```
frontend:
  phases:
    build:
      commands:
        - if [ "${AWS_BRANCH}" = "master" ]; then echo "master branch"; fi
        - if [ "${AWS_BRANCH}" = "dev" ]; then echo "dev branch"; fi
```

Navigating to a Subfolder

For monorepos, users want to be able to cd into a folder to run the build. After you run the cd command, it applies to all stages of your build so you don't need to repeat the command in separate phases.

```
version: 1.0
env:
  variables:
      key: value
frontend:
  phases:
```

```
    preBuild:
      commands:
        - cd react-app
        - npm ci
    build:
      commands:
        - npm run build
```

Deploying the Backend with Your Front End

The amplifyPush is a helper script that helps you with backend deployments. The build settings below automatically determine the correct backend environment to deploy for the current branch.

```
version: 1.0
env:
  variables:
      key: value
backend:
  phases:
    build:
      commands:
        - amplifyPush --simple
```

Setting the Output Folder

The following build settings set the output directory to the public folder.

```
frontend:
  phases:
    commands:
      build:
        - yarn run build
  artifacts:
    baseDirectory: public
```

Installing Packages as Part of Your Build

You can use npm or yarn to install packages during the build.

```
frontend:
  phases:
    build:
      commands:
        - npm install -g pkg-foo
        - pkg-foo deploy
        - yarn run build
  artifacts:
    baseDirectory: public
```

Using a Private npm Registry

You can add references to a private registry in your build settings or add it as an environment variable.

```
build:
  phases:
    preBuild:
      commands:
        - npm config set <key> <value>
        - npm config set registry https://registry.npmjs.org
        - npm config set always-auth true
        - npm config set email hello@amplifyapp.com
        - yarn install
```

Installing OS packages

You can install OS packages for missing dependencies.

```
build:
  phases:
    preBuild:
      commands:
        - yum install -y <package>
```

Key-value storage for every build

The **envCache** provides key-value storage at build time. Values stored in the envCache can only be modified during a build and can be re-used at the next build. Using the envCache, we can store information on the deployed environment and make it available to the build container in successive builds. Unlike values stored in the envCache, changes to environment variables during a build are not persisted to future builds.

Example usage:

```
envCache --set <key> <value>
envCache --get <key>
```

Serverless Tutorial: Deploying Backend with your Frontend

The Amplify Console enables developers building apps with the Amplify Framework to continuously deploy updates to their backend and frontend on every code commit. With the Amplify Console you can deploy serverless backends with GraphQL/REST APIs, authentication, analytics, and storage created by the Amplify CLI. **Note: This feature only works with the Amplify CLI v1.0+**.

In this tutorial, we are going to create and deploy a React app which implements a basic authentication flow for signing up/signing in users as well as protected client side routing using AWS Amplify.

- If you are using another frontend framework or Amplify backend category, the same steps can be applied to deploying your backend and frontend with the Amplify Console. The final code for this project is available as a sample on GitHub.
- If you already have an existing Amplify app, please jump to step 6.

1. Install the Amplify CLI to initialize a new Amplify project.

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

2. Initialize the CLI at the root of your project and name your environment *prod*. You can use the Amplify CLI to add backend functionality to your app. Backend functionality includes all cloud categories such as authentication, analytics, APIs, and storage.

```
3. create-react-app myapp
4. cd myapp
5. amplify init
    Enter a name for the environment: prod
```

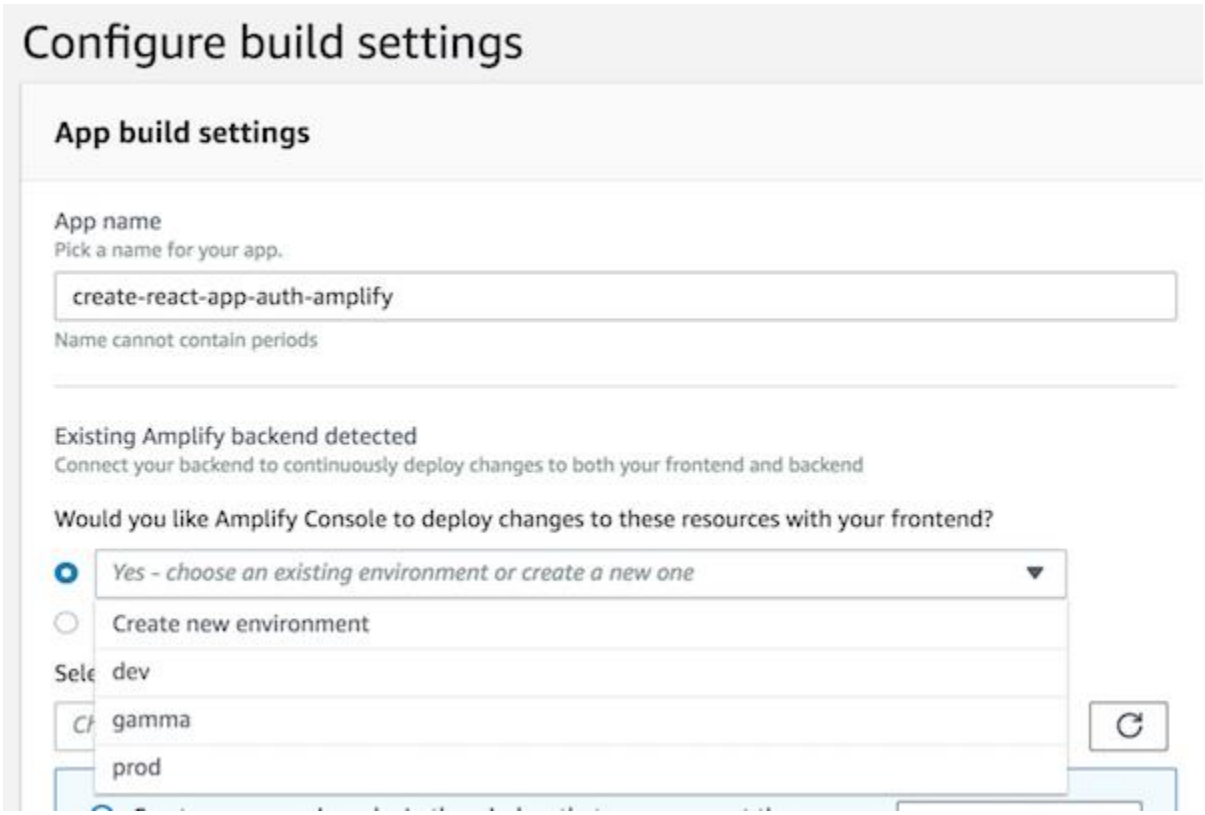
6. Add authentication with sign-in, sign-up, multi-factor auth to your app. Accept all defaults and push the updated project configuration to AWS. It will deploy an Amazon Cognito resource that enables user authentication.

```
7. amplify add auth
8. <accept defaults>
9. ...
   amplify push
```

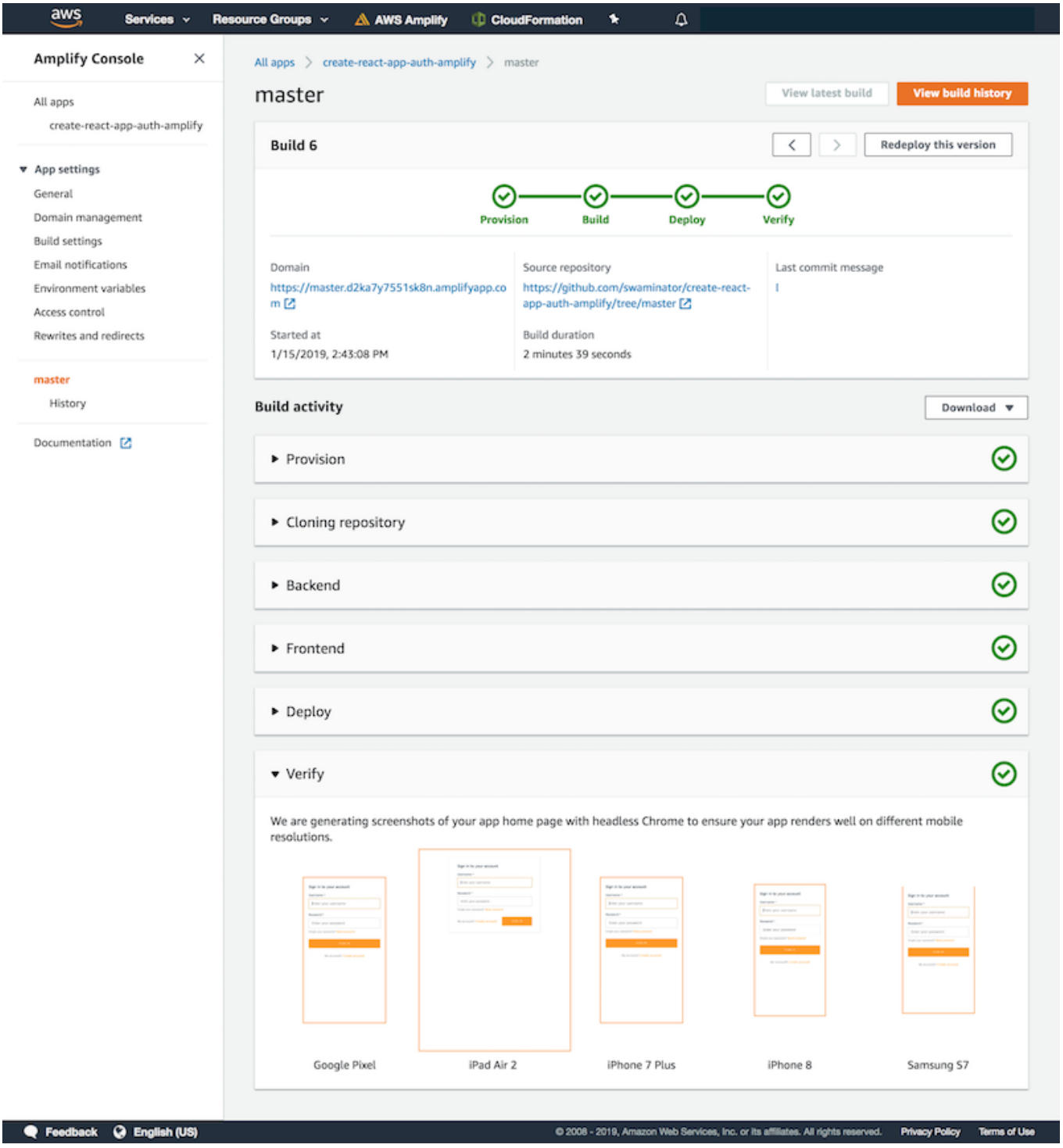
10. Update your frontend code to add the *withAuthenticator* HOC component to your *App.js* as shown here. Test your app locally to make sure you see a sign-in screen.

```
npm start
```

11. Commit your code and upload it to a Git provider of your choice (the Amplify Console supports GitHub, BitBucket, GitLab, and AWS CodeCommit).
12. Log in to the Amplify Console and choose **Get Started** under **Deploy**. Connect your Git provider, repository and branch and then choose **Next**.
13. The Amplify Console automatically detects that your repository has an Amplify backend. From the dropdown, choose *prod* (the environment you just created with the CLI). This will cause the Console to automatically update the *prod* backend anytime you commit changes to your repository.



14. Choose **Next** and **Save and deploy**. Your app build will start by deploying the backend followed by the frontend. Click on your branch name to see the running build. When your build succeeds, you should be able to access your app.

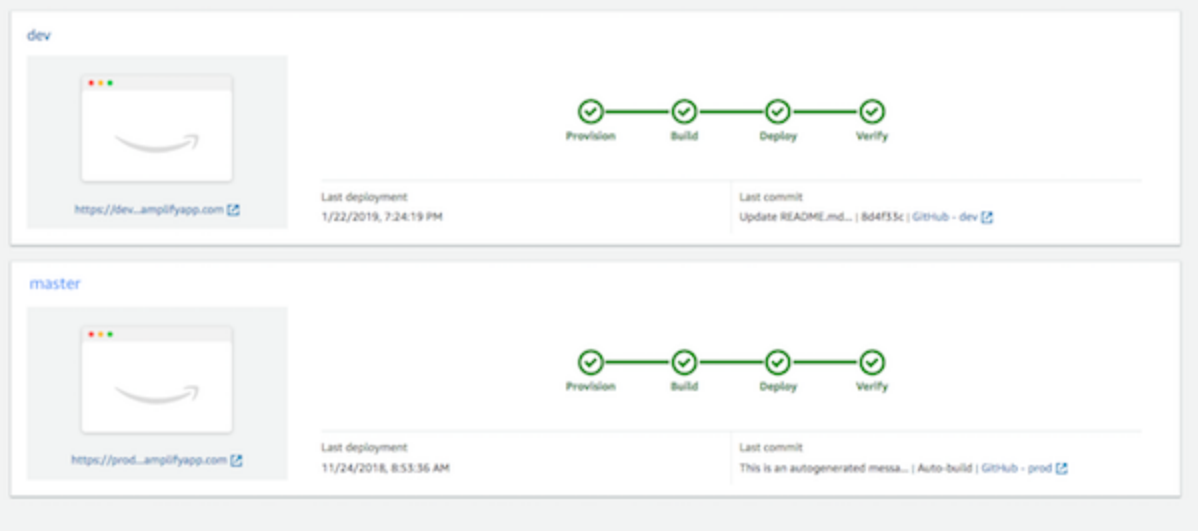


Feature branch deployments and team workflows

The Amplify Console is designed to work with feature branch and GitFlow workflows. The Amplify Console leverages Git branches to create new deployments every time a developer connects a new branch in their repository. After connecting your first branch, you can create a new feature branch deployment by adding a branch as follows:

1. On the branch list page, choose **Connect branch**.
2. Choose a branch from your repository.
3. Save and then deploy your app.

Your app now has two deployments available at *https://master.appid.amplifyapp.com* and *https://dev.appid.amplifyapp.com*. This may vary from team-to-team, but typically the **master branch** tracks release code and is your production branch. The **develop branch** is used as an integration branch to test new features. This way beta testers can test unreleased features on the develop branch deployment, without affecting any of the production end users on the master branch deployment.



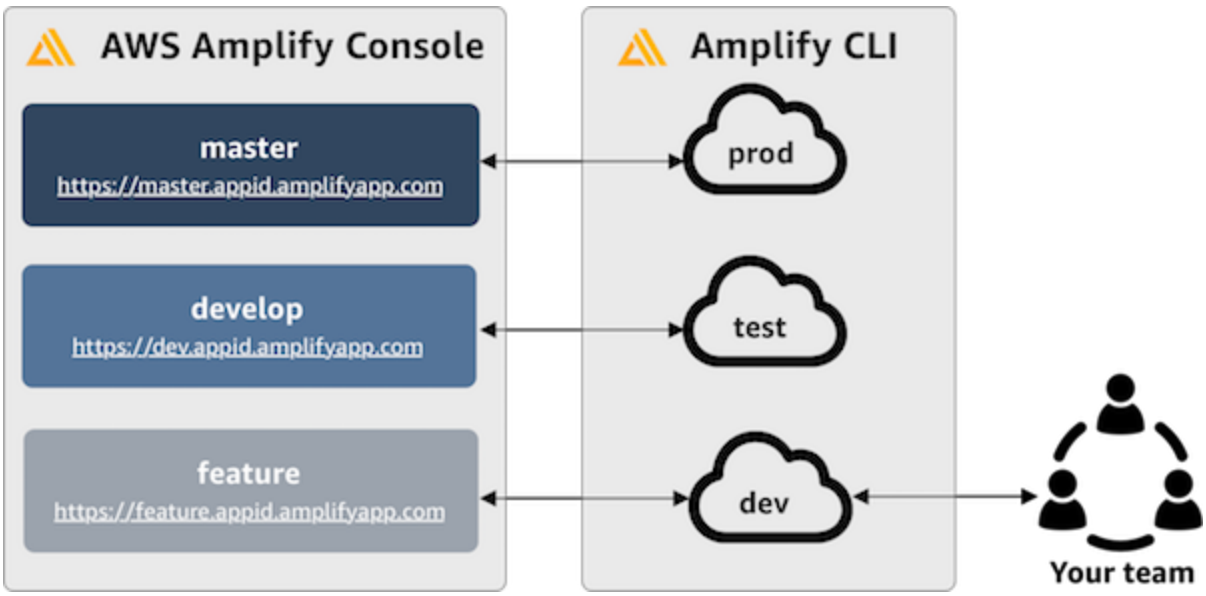
Team workflows with Amplify CLI backend environments

A feature branch deployment can consist of a **frontend** and [(optionally) a **backend**](https://docs.aws.amazon.com/amplify/latest/userguide/deploy-backend.html). The frontend is built and deployed to a global CDN, while the backend is deployed by the Amplify CLI to AWS. You can use the Amplify Console to continuously deploy backend resources such as GraphQL APIs and Lambda functions with your feature branch deployment. You can use the following models to deploy your backend and frontend with the Amplify Console:

Topics

Feature branch workflow

- Create **prod**, **test**, and **dev** backend environments with the Amplify CLI.
- Map **prod** and **test** to **master** and **develop** branches.
- Teammates can use the **dev** backend environment to test against **feature** branches.



1. Install the Amplify CLI to initialize a new Amplify project.

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

2. Initialize a *prod* backend environment for your project. If you don't have a project, create one using bootstrap tools like create-react-app or Gatsby.

```
create-react-app next-unicorn
cd next-unicorn
amplify init
 ? Do you want to use an existing environment? (Y/n): n
 ? Enter a name for the environment: prod
...
amplify push
```

9. Add *test* and *dev* backend environments.

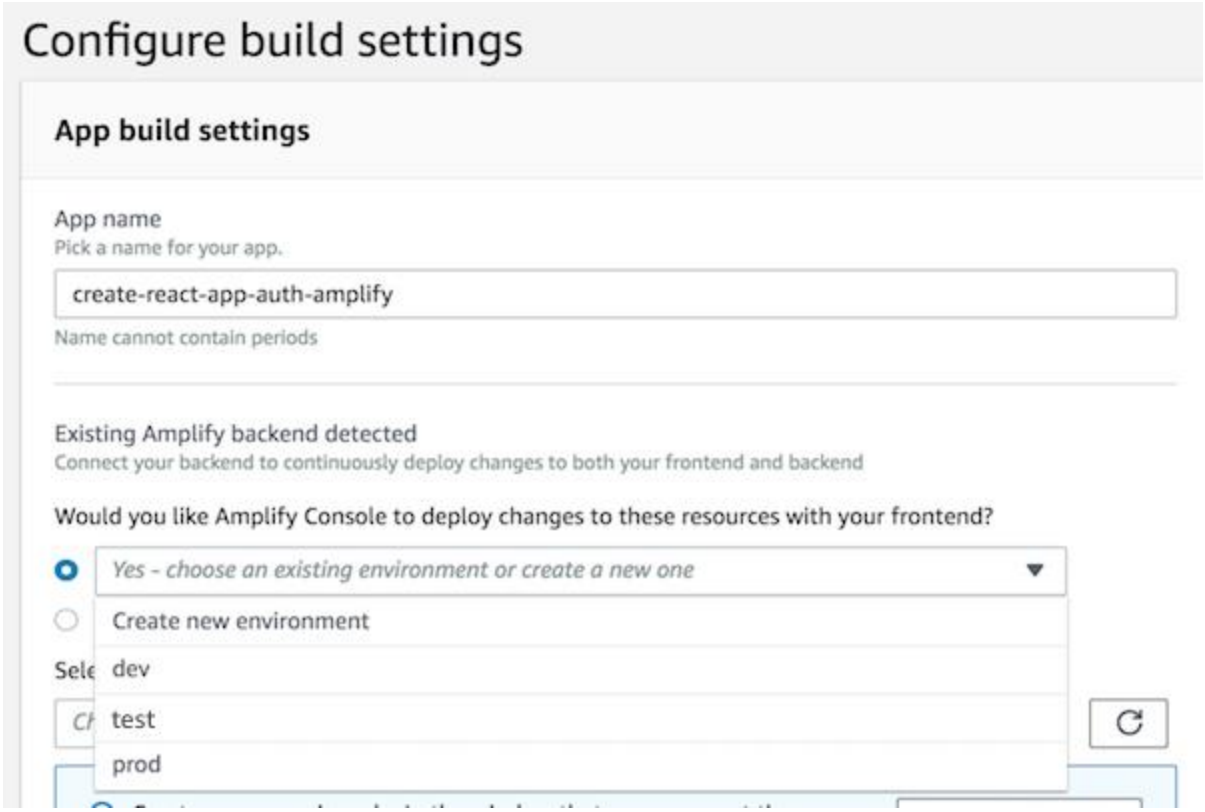
```
 amplify env add
  ? Do you want to use an existing environment? (Y/n): n
  ? Enter a name for the environment: test
 ...
 amplify push

 amplify env add
  ? Do you want to use an existing environment? (Y/n): n
  ? Enter a name for the environment: dev
 ...
amplify push
```

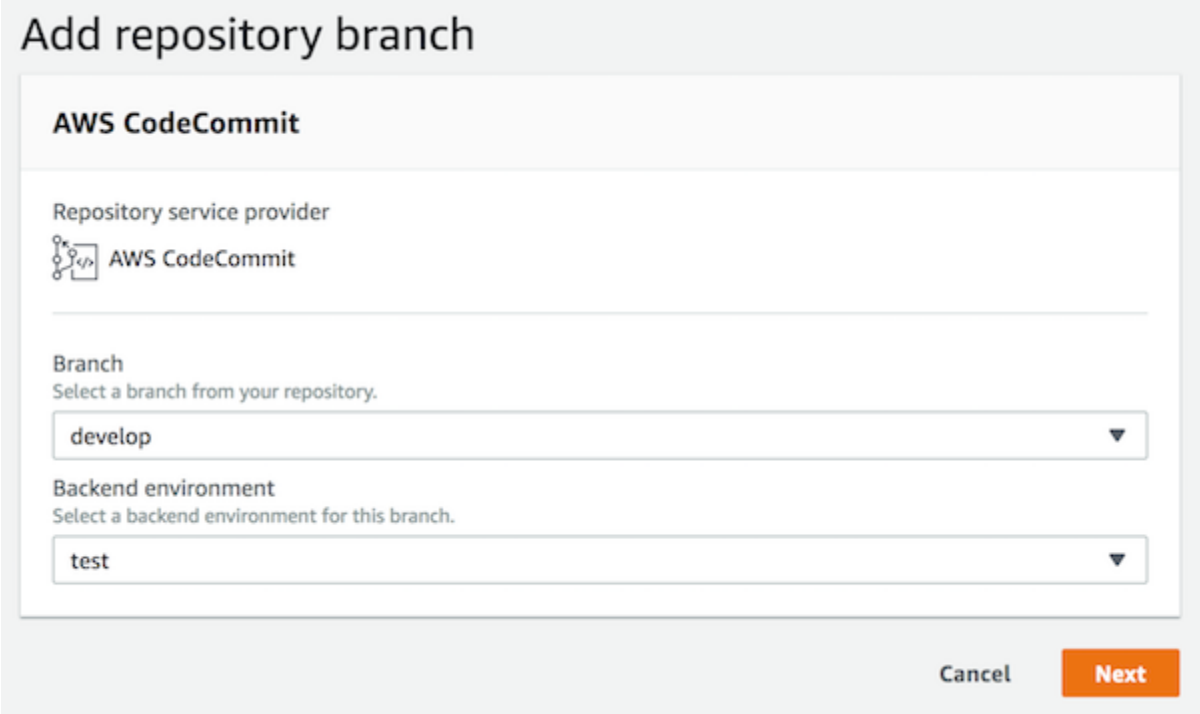
20. Push code to a Git repository of your choice (in this example we'll assume you pushed to master).

```
21.  git commit -am 'Added dev, test, and prod environments'
   git push origin master
```

22. Connect your repo > branch *master* to the Amplify Console.
23. The Amplify Console will detect backend environments created by the Amplify CLI. Choose *prod* from the dropdown and grant the service role to Amplify Console. Choose **Save and deploy**. After the build completes you will get a master branch deployment available at *https://master.appid.amplifyapp.com*.



24. Connect *develop* branch in Amplify Console (assume *develop* and *master* branch are the same at this point). Choose the *test* backend environment.



25. The Amplify Console is now setup. You can start working on new features in a feature branch. Add backend functionality by using the *dev* backend environment from your local workstation.

```
git checkout -b newinternet
amplify env checkout dev
amplify add api
...
amplify push
```

30. After you finish working on the feature, commit your code, create a pull request to review internally.

```
git commit -am 'Decentralized internet v0.1'
git push origin newinternet
```

32. To preview what the changes will look like, go to the Console and connect your feature branch. Note: If you have the AWS CLI installed on your system (Not the Amplify CLI), you can connect a branch directly from your terminal. You can find your appid by going to App settings > General > AppARN:
arn:aws:amplify:<region>:<region>:apps/<appid>

```
aws amplify create-branch --app-id <appid> --branch-name <branchname>
aws amplify start-job --app-id <appid> --branch-name <branchname> --
job-type RELEASE
```

34. Your feature will be accessible at *https://newinternet.appid.amplifyapp.com* to share with your teammates. If everything looks good merge the PR to the develop branch.

```
git checkout develop
git merge newinternet
git push
```

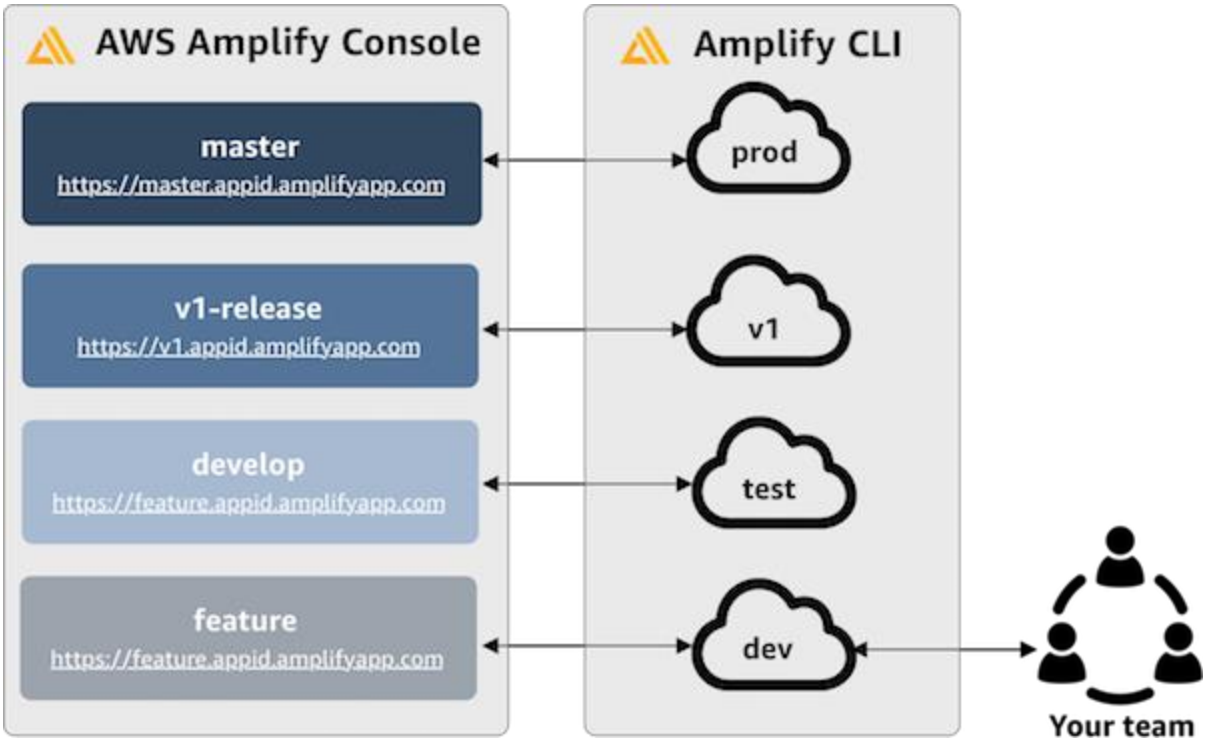
37. This will kickoff a build that will update the backend as well as the frontend in the Amplify Console with a branch deployment at *https://dev.appid.amplifyapp.com*. You can share this link with internal stakeholders so they can review the new feature.
38. Delete your feature branch from Git, Amplify Console, and remove the backend environment from the cloud (you can always spin up a new one based on by running 'amplify env checkout prod' and running 'amplify env add').

```
39.  git push origin --delete newinternet
40.  aws amplify delete-branch --app-id <appid> --branch-name <branchname>
   amplify env remove dev
```

GitFlow workflow

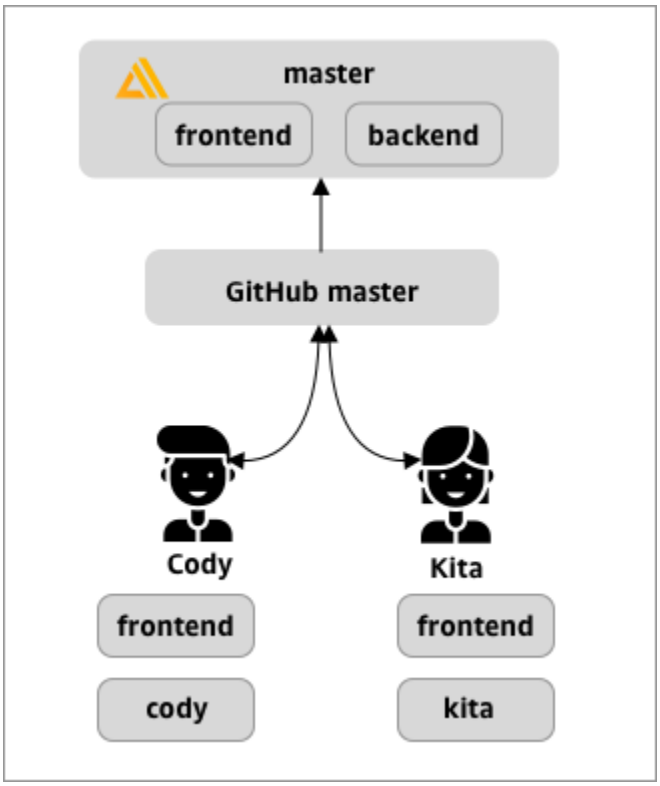
GitFlow uses two branches to record the history of the project. The *master* branch tracks release code only, and the *develop* branch is used as an integration branch for new features. GitFlow simplifies parallel development by isolating new development from completed work. New development (such as features and non-emergency bug fixes) is done in *feature* branches. When the developer is satisfied that the code is ready for release, the *feature* branch is merged back into the integration *develop* branch. The only commits to the master branch are merges from *release* branches and *hotfix* branches (to fix emergency bugs).

The diagram below shows a recommended setup with GitFlow. You can follow the same process as described in the feature branch workflow section above.



Per-developer sandbox

- Each developer in a team creates a sandbox environment in the cloud that is separate from their local computer. This allows developers to work in isolation from each other without overwriting other team members' changes.
- Each branch in the Amplify Console has its own backend. This ensures that the Amplify Console uses the Git repository as a single source of truth from which to deploy changes, rather than relying on developers on the team to manually push their backend or front end to production from their local computers.



1. Install the Amplify CLI to initialize a new Amplify project.

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

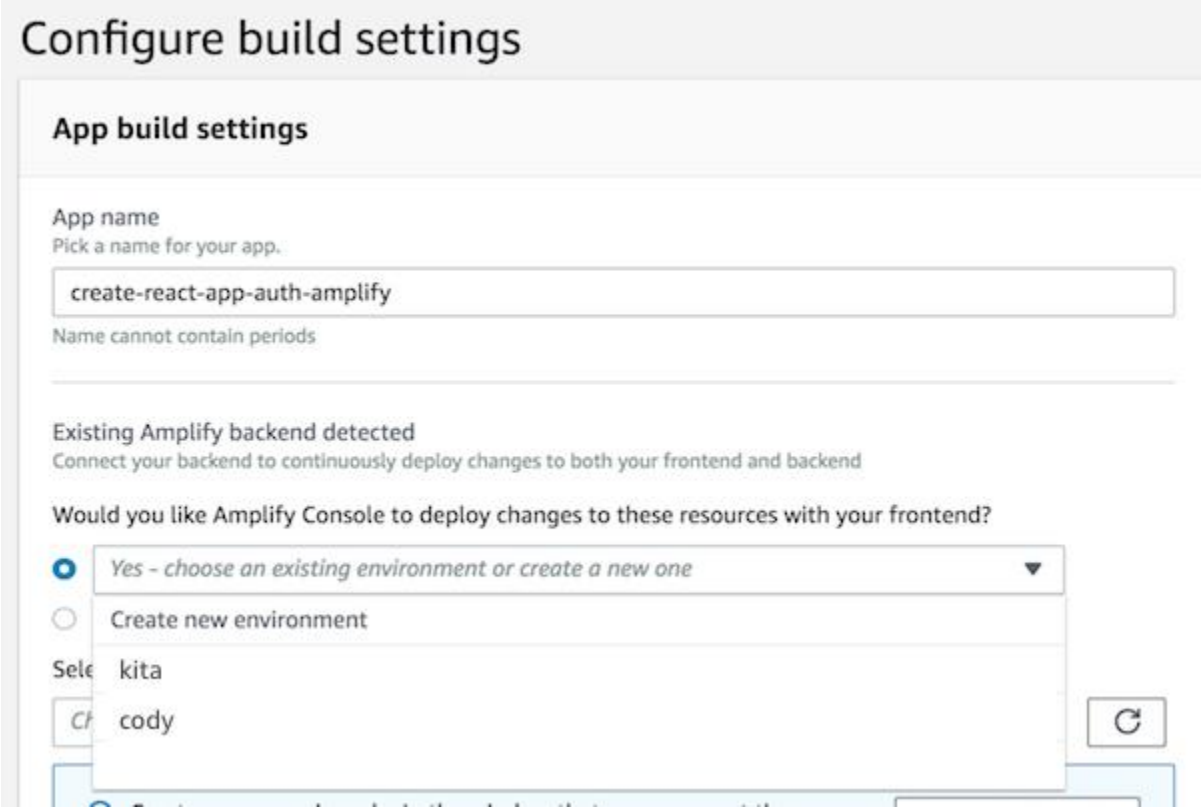
2. Initialize a *kita* backend environment for your project. If you don't have a project, create one using bootstrap tools like create-react-app or Gatsby.

```
cd next-unicorn
amplify init
 ? Do you want to use an existing environment? (Y/n): n
 ? Enter a name for the environment: kita
...
amplify push
```

1. Push code to a Git repository of your choice (in this example we'll assume you pushed to master).

2.
```
git commit -am 'Added kita sandbox'
git push origin master
```

3. Connect your repo > *master* to the Amplify Console.
4. The Amplify Console will detect backend environments created by the Amplify CLI. Choose *Create new environment* from the dropdown and grant the service role to Amplify Console. Choose **Save and deploy**. After the build completes you will get a master branch deployment available at *https://master.appid.amplifyapp.com* with a new backend environment that is linked to the branch.



5. Connect *develop* branch in Amplify Console (assume *develop* and *master* branch are the same at this point) and choose *Create new environment*. After the build completes you will get a develop branch deployment available at *https://develop.appid.amplifyapp.com* with a new backend environment that is linked to the branch.

Deploy to Amplify Console Button

The **Deploy to Amplify Console** button enables you to share GitHub projects publicly or within your team. The button looks like:

Add 'Deploy to Amplify Console' button to your repository or blog

Add this button to your GitHub README.md file, blog post, or any other markup page that renders HTML. The button has two components:

1. An SVG image: `https://oneclick.amplifyapp.com/button.svg`
2. The Amplify Console URL with a link to your GitHub repository. Please copy your repo URL (e.g. `https://github.com/username/repository`) only or provide a deep link into a specific folder (e.g. `https://github.com/username/repository/tree/master/folder`). The Amplify Console will deploy the default branch in your repository. Additional branches can be connected after the app is connected.
3. Add the button to a markdown file (e.g. your GitHub README.md). **Please replace https://github.com/username/repository with your repository name**.

```
[![amplifybutton](https://oneclick.amplifyapp.com/button.svg)](https://console.aws.amazon.com/amplify/home#/deploy?repo=https://github.com/username/repository)
```

1. You can also add the button to any HTML document:

```
<a
href="https://console.aws.amazon.com/amplify/home#/deploy?repo=https://github.com/username/repository">
    <img src="https://oneclick.amplifyapp.com/button.svg" alt="Deploy to Amplify Console">
```

Using Redirects

Redirects enable a web server to reroute navigation from one URL to another. Common reasons for using redirects include: to customize the appearance of URL, to avoid broken links, to move the hosting location of an app or site without changing its address, and to change a requested URL to the form needed by a web app.

Types of Redirects

There are several types of redirects that support specific scenarios.

Permanent redirect (301)

301 redirects are intended for lasting changes to the destination of a web address. Search engine ranking history of the original address applies to the new destination address. Redirection occurs

on the client-side, so a browser navigation bar shows the destination address after redirection. Common reasons to use 301 redirects include:

- To avoid a broken link when the address of a page changes.
- To avoid a broken link when a user makes a predictable typo in an address.

Temporary redirect (302)

302 redirects are intended for temporary changes to the destination of a web address. Search engine ranking history of the original address doesn't apply to the new destination address. Redirection occurs on the client-side, so a browser navigation bar shows the destination address after redirection. Common reasons to use 302 redirects include:

- To provide a detour destination while repairs are made to an original address.
- To provide test pages for A/B comparison of user interface.

Rewrite (200)

200 redirects (rewrites) are intended to show content from the destination address as if it were served from the original address. Search engine ranking history continues to apply to the original address. Redirection occurs on the server-side, so a browser navigation bar shows the original address after redirection. Common reasons to use 200 redirects include:

- To redirect an entire site to a new hosting location without changing the address of the site.
- To redirect all traffic to a single page web app (SPA) to its index.html page for handling by a client-side router function.

Not Found (404)

404 redirects occur when a request points to an address that doesn't exist. The destination page of a 404 is displayed instead of the requested one. Common reasons a 404 redirect occurs include:

- To avoid a broken link message when a user enters a bad URL.
- To point requests to nonexistent pages of a web app to its index.html page for handling by a client-side router function.

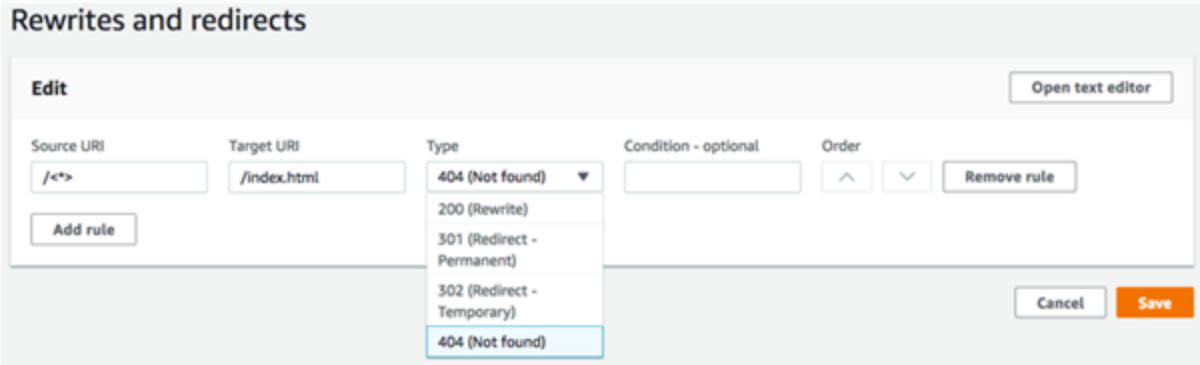
Parts of a Redirect

Redirects consist of the following:

- An original address - The address the user requested.
- A destination address - The address that actually serves the content that the user sees.
- A redirect type - Types include a permanent redirect (301), a temporary redirect (302), a rewrite (200), or not found (404).

- A two letter country code (optional) - a value you can include to segment the user experience of your app by region

To create and edit redirects, choose **Rewrites and redirects settings** in the left navigation pane.



To bulk edit redirects in a JSON editor, choose **Open text editor**.

Order of Redirects

Redirects are executed from the top of the list down. Make sure that your ordering has the effect you intend. For example, the following order of redirects causes all requests for a given path under */docs/* to redirect to the same path under */documents/*, except */docs/specific-filename.html* which redirects to */documents/different-filename.html*:

```
/docs/specific-filename.html /documents/diferent-filename.html 301
/docs/<*> /documents/<*>
```

The following order of redirects ignores the redirection of *specific-filename.html* to *different-filename.html*:

```
/docs/<*> /documents/<*>
/docs/specific-filename.html /documents/diferent-filename.html 301
```

Simple Redirects and Rewrites

In this section we include example code for common redirect scenarios.

You can use the following example code to permanently redirect a specific page to a new address.

Original address	Destination Address	Redirect Type	Country Code
`/original.html`	`/destination.html`	`permanent redirect (301)`	

JSON: [{"source": "/original.html", "status": "301", "target": "/destination.html", "condition": null}]

You can use the following example code to redirect any path under a folder to the same path under a different folder.

Original address	Destination Address	Redirect Type	Country Code
`docs/<*>`	`/documents/<*>`	`permanent redirect (301)`	

JSON [{"source": "/docs/<*>", "status": "301", "target": "/documents/<*>", "condition": null}]

You can use the following example code to redirect all traffic to index.html as a rewrite. In this scenario, the rewrite makes it appear to the user that they have arrived at the original address.

Original address	Destination Address	Redirect Type	Country Code
`<*>`	`/index.html`	`rewrite (200)`	

JSON [{"source": "/<*>", "status": "200", "target": "/index.html", "condition": null}]

You can use the following example code to use a rewrite to change the subdomain that appears to the user.

Original address	Destination Address	Redirect Type	Country Code
`https://mydomain.com`	`https://www.mydomain.com`	`rewrite (200)`	

JSON [{"source": "https://mydomain.com", "status": "200", "target": "https://www.mydomain.com", "condition": null}]

You can use the following example code to redirect paths under a folder that can't be found to a custom 404 page.

Original address	Destination Address	Redirect Type	Country Code
`/<*>`	`/404.html`	`not found (404)`	

JSON [{"source": "/<*>", "status": "404", "target": "/404.html", "condition": null}]

Redirects for Single Page Web Apps (SPA)

Most SPA frameworks support HTML5 history.pushState() to change browser location without triggering a server request. This works for users who begin their journey from the root (or */index.html*), but fails for users who navigate directly to any other page. Using regular expressions, the following example sets up a 200 rewrite for all files to index.html except for the specific file extensions specified in the regular expression.

Original address	Destination Address	Redirect Type	Country Code
`</^[^.]+$\|\.(?!(css\|gif\|ico\|jpg\|js\|png\|txt\|svg\|woff\|ttf)$)([^.]+$)/>`	`/index.html`	`200`	

JSON [{"source": "</^[^.]+$|.(?!(css|gif|ico|jpg|js|png|txt|svg|woff|ttf)$)([^.]+$)/>", "status": "200", "target": "index.html", "condition": null}]

Reverse Proxy Rewrite

The following example uses a rewrite to proxy content from another location so that it appears to user that the domain hasn't changed:

Original address	Destination Address	Redirect Type	Country Code
`/images`	`https://images.otherdomain.com`	`rewrite (200)`	

JSON [{"source": "/images", "status": "200", "target": "https://images.otherdomain.com", "condition": null}]

Trailing slashes and Clean URLs

To create clean URL structures like *about* instead of *about.html*, static site generators such as Hugo generate directories for pages with an index.html (*/about/index.html*). The Amplify Console automatically creates clean URLs by adding a trailing slash when required. The table below highlights different scenarios:

User inputs in browser	URL in the address bar	Document served
`/about`	`/about`	`/about.html`
`/about (when about.html returns 404)`	`/about/`	`/about/index.html`
`/about/`	`/about/`	`/about/index.html`

Placeholders

You can use the following example code to redirect paths in a folder structure to a matching structure in another folder.

Original address	Destination Address	Redirect Type	Country Code
`/docs/<year>/<month>/<date>/<itemid>`	`/documents/<year>/<month>/<date>/<itemid>`	`permanent redirect (301)`	

JSON [{"source": "/docs/<year>/<month>/<date>/<itemid>", "status": "301", "target": "/documents/<year>/<month>/<date>/<itemid>", "condition": null}]

Query Strings and Path Parameters

You can use the following example code to redirect a path to a folder with a name that matches the value of a query string element in the original address:

Original address	Destination Address	Redirect Type	Country Code
`/docs?id=<my-blog-id-value`	`/documents/<my-blog-post-id-value>`	`permanent redirect (301)`	

JSON [{"source": "/docs?id=<my-blog-id-value", "status": "301", "target": "/documents/<my-blog-post-id-value>", "condition": null}]

You can use the following example code to redirect all paths that can't be found at a given level of a folder structure to index.html in a specified folder.

Original address	Destination Address	Redirect Type	Country Code
`/documents/<folder>/<child-folder>/<grand-child-folder>`	`/documents/index.html`	`404`	

JSON [{"source": "/documents/<x>/<y>/<z>", "status": "404", "target": "/documents/index.html", "condition": null}]

Region-based Redirects

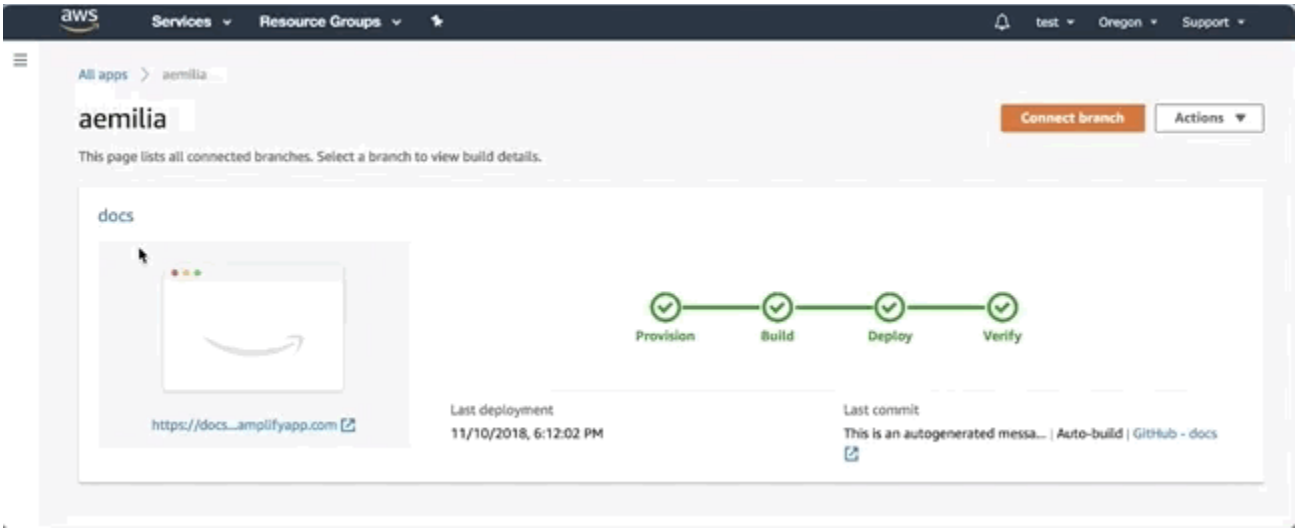
You can use the following example code to redirect requests based on region.

Original address	Destination Address	Redirect Type	Country Code
`/documents`	`/documents/us/`	`302`	`<US>`

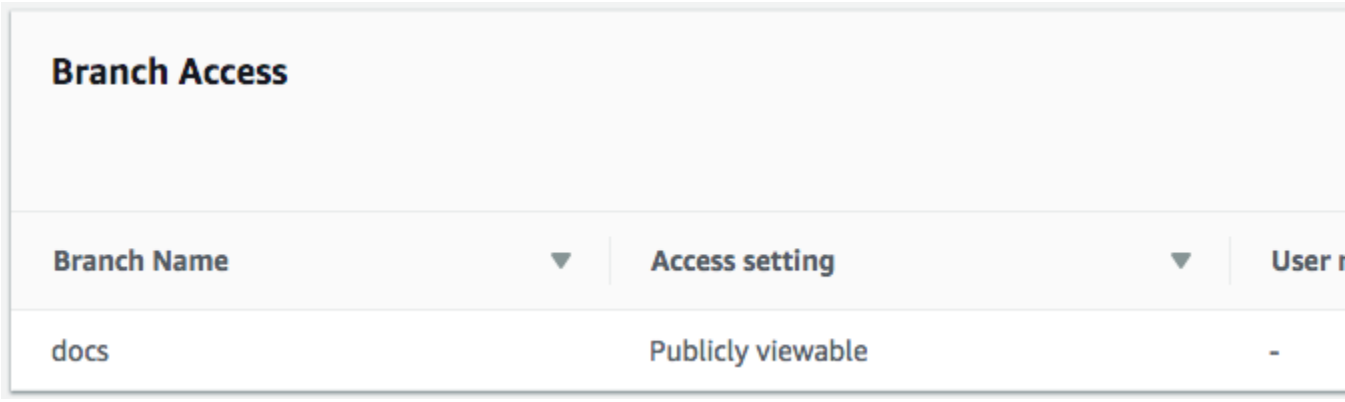
JSON [{"source": "/documents", "status": "302", "target": "/documents/us/", "condition": "<US>"}]

Restricting access

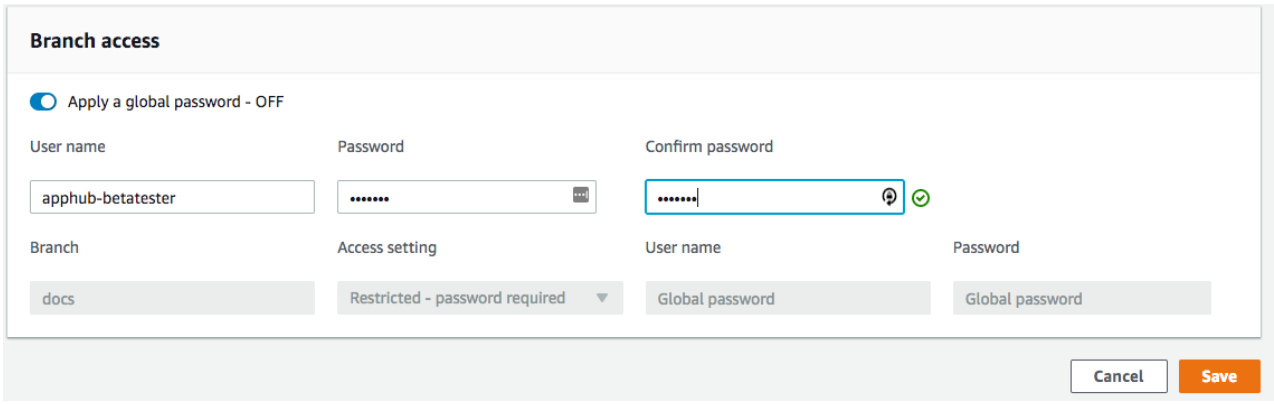
Working on unreleased features? Password protect feature branches that are not ready to be accessed publicly.



1. Choose **App settings** and then choose **Access control**.
2. In the list of your connected branches, choose **Manage access** in the top-right corner.



3. Do one of the following:
    - You can set a global password that you want to apply to all connected branches. For example, if you have *master*, *dev*, and *feature* connected, you can use a global password to set the same user name and password for all branches.
    - You can set a password at the branch level.



Environment Variables

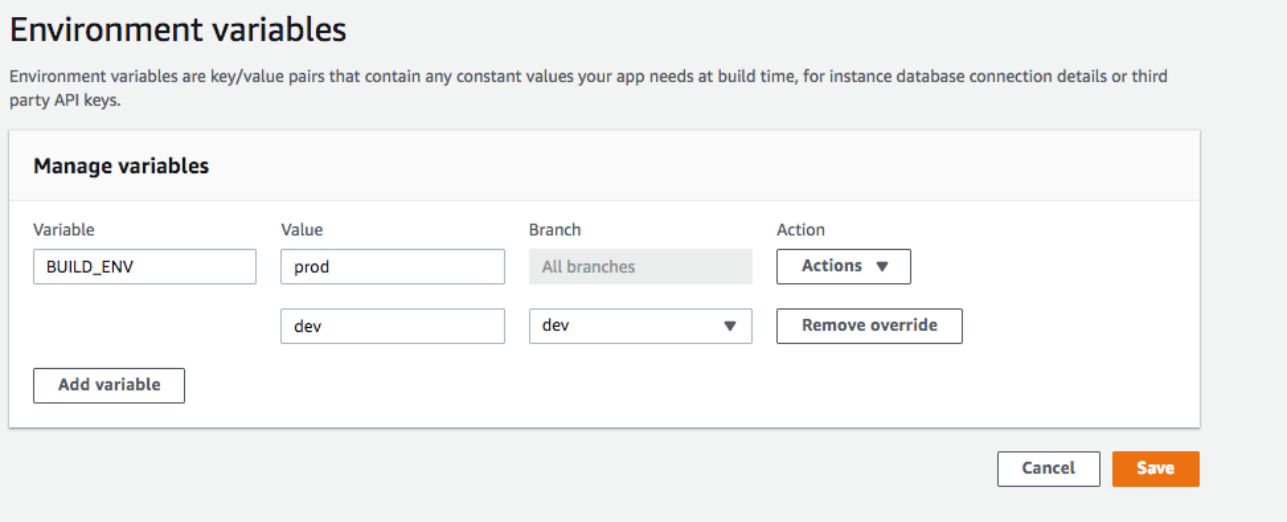
Environment variables are key-value pairs that are available at build time. These configurations can be anything, including:

- Database connection details
- Third-party API keys
- Different customization parameters
- Secrets

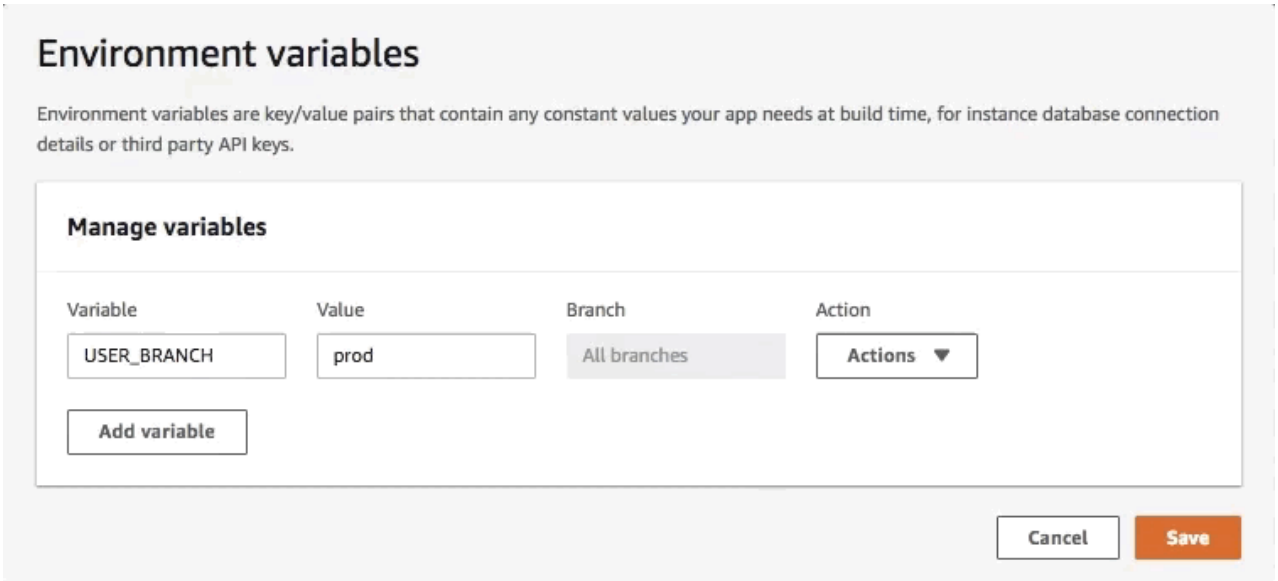
As a best practice, you can use environment variables to expose these configurations. All environment variables that you add are encrypted to prevent rogue access so you can use them to store secret information.

Setting Environment Variables

1. In the Amplify console, choose **App Settings** and then choose **Environment Variables**.
2. In the **key** and **value** fields, enter all your app environment variables. By default, the Amplify console applies the environment variables across all branches, so you don't have to re-enter variables when you connect a new branch.
3. Choose **Save**.



If you need to customize a variable specifically for a branch, you can add a branch override. To do this, choose **Actions** and then choose **Add variable override**. You now have a set of environment variables specific to your branch.



Accessing Environment Variables

To access an environment variable during a build, edit your build settings to include the environment variable in your build commands.

1. In the Amplify console, choose **App Settings**, choose **Build settings**, and then choose **Edit**.
2. Add the environment variable to your build command. You should now be able to access your environment variable during your next build.

```
3. build:
```

```
4.   commands:
       - npm run build:$BUILD_ENV
```

Custom Headers

Custom HTTP headers allow you to specify headers for every HTTP response. Response headers can be used for debugging, security, and informational purposes. Define custom header rules for your app as follows:

1. From the navigation bar on the left, choose App Settings > Build Settings, and then choose *Edit* to edit your buildspec.
2. In the *frontend* section of the YML file, add the custom headers for your app as follows:

```
version: 0.1
frontend:
    phases:
        build:
        post_build:
    artifacts:
        baseDirectory:
    customHeaders:
       - pattern: '*.json'
         headers:
         - key: 'custom-header-name-1'
           value: 'custom-header-value-1'
         - key: 'custom-header-name-2'
           value: 'custom-header-value-2'
       - pattern: '/path/*'
         headers:
         - key: 'custom-header-name-1'
           value: 'custom-header-value-2'
```

- **pattern** - Headers applied to all URL file paths that match the pattern.
- **headers** - Define headers that match the file pattern. The **key** is the custom header name and the **value** is the custom header value.
- To learn more about HTTP headers, please see Mozilla's documentation for a list of HTTP headers.

1. Choose **Save**. Your custom header settings will now be applied to your app.

Example: Security Headers

The following security headers enable enforcing HTTPS, preventing XSS attacks, and defending your browser against clickjacking. Add it to your app's buildspec and choose **Save** to apply the custom header settings.

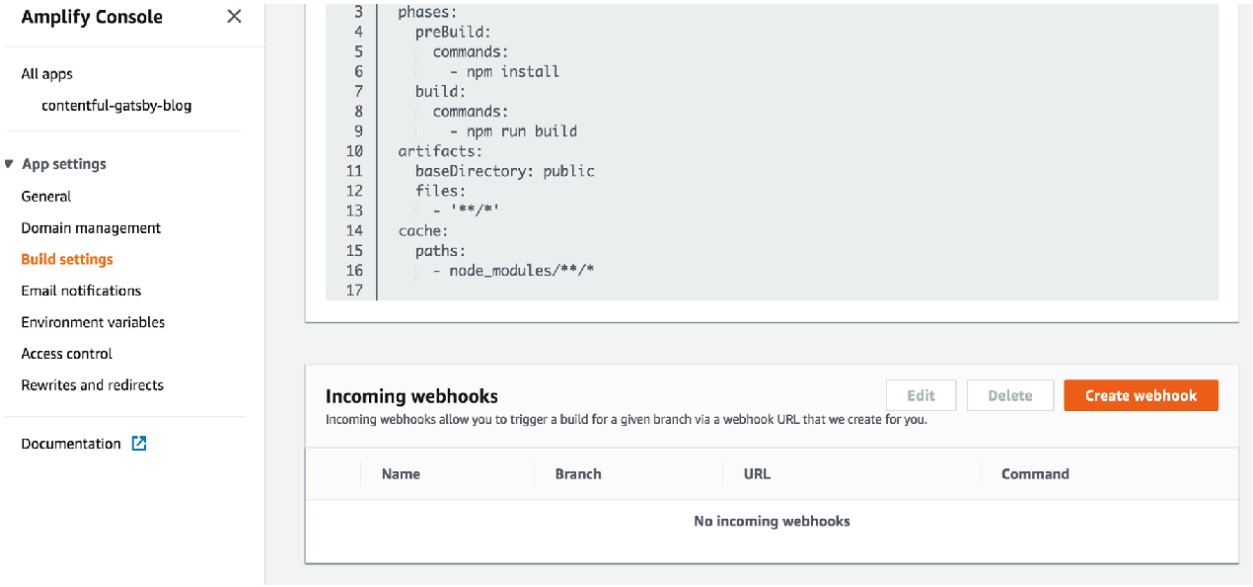
```
customHeaders:
        - pattern: '**/*'
```

```
headers:
      - key: 'Strict-Transport-Security'
               value: 'max-age=31536000; includeSubDomains'
      - key: 'X-Frame-Options'
               value: 'X-Frame-Options: SAMEORIGIN'
      - key: 'X-XSS-Protection'
               value: 'X-XSS-Protection: 1; mode=block'
      - key: 'X-Content-Type-Options'
               value: 'X-Content-Type-Options: nosniff'
      - key: 'Content-Security-Policy'
               value: "default-src 'self'"
```

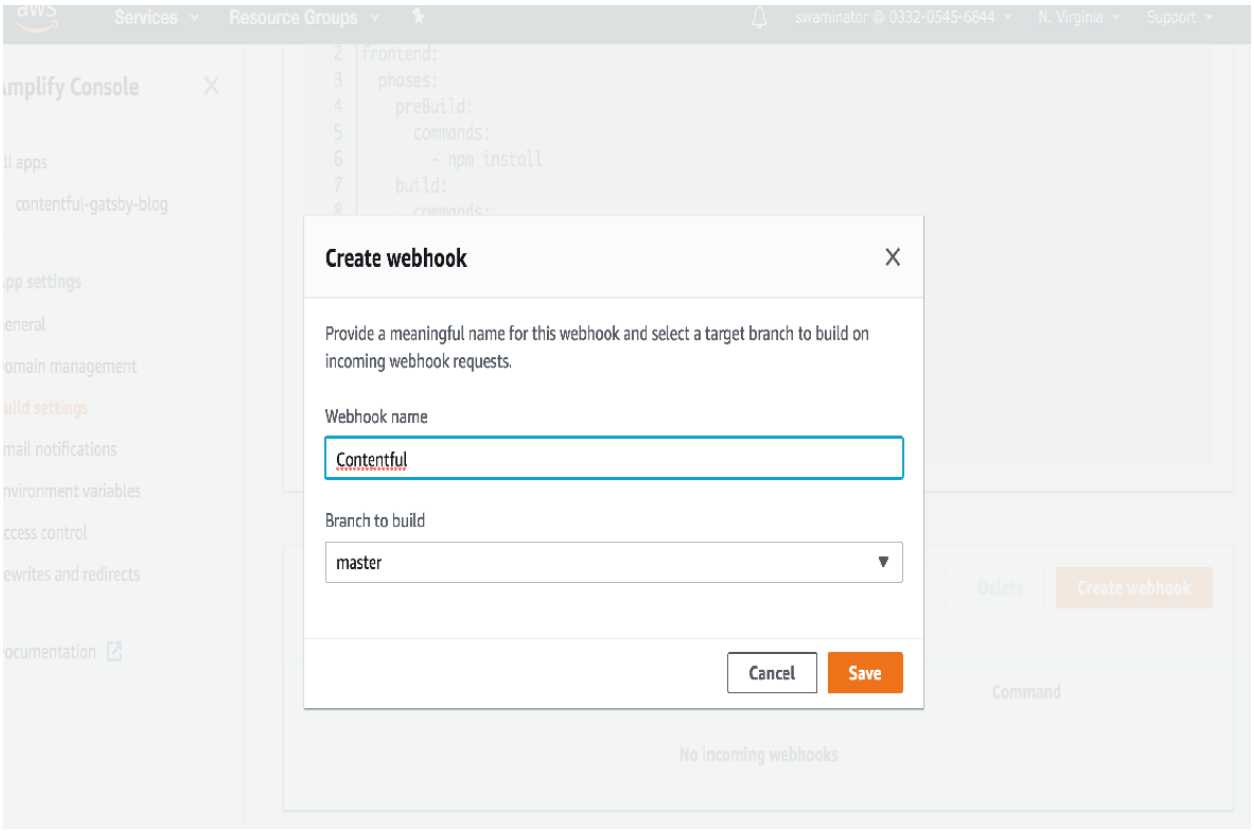
Incoming Webhooks

Set up an incoming webhook in the Amplify Console to trigger a build without comitting code to your Git repository. Webhook triggers can be used with headless CMS tools (such as Contentful or GraphCMS) to trigger builds on content changes, or to trigger daily builds using services such as Zapier.

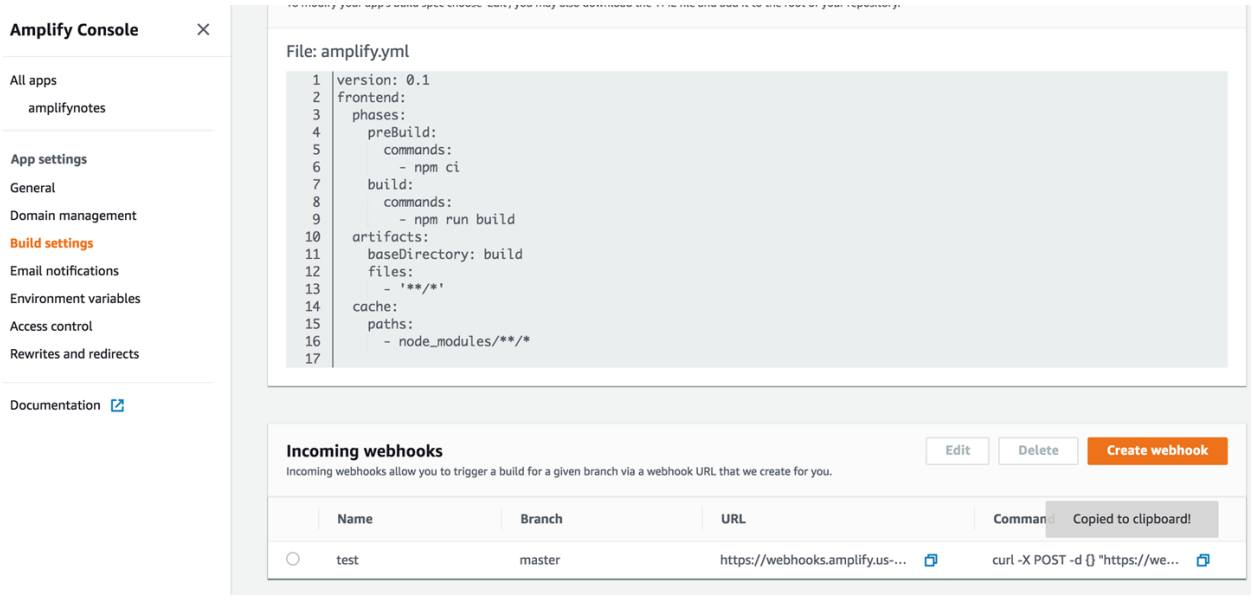
1. Log in to the Amplify Console and choose your app.
2. Navigate to **App Settings > Build Settings** and scroll to the **Incoming webhook** container. Choose **Create webhook**



3. Give your webhook a name and choose **Save**.



4. You can copy the webhook URL or run a curl command in your command line to trigger a new build.



Adding a Service Role to the Amplify Console When You Connect an App

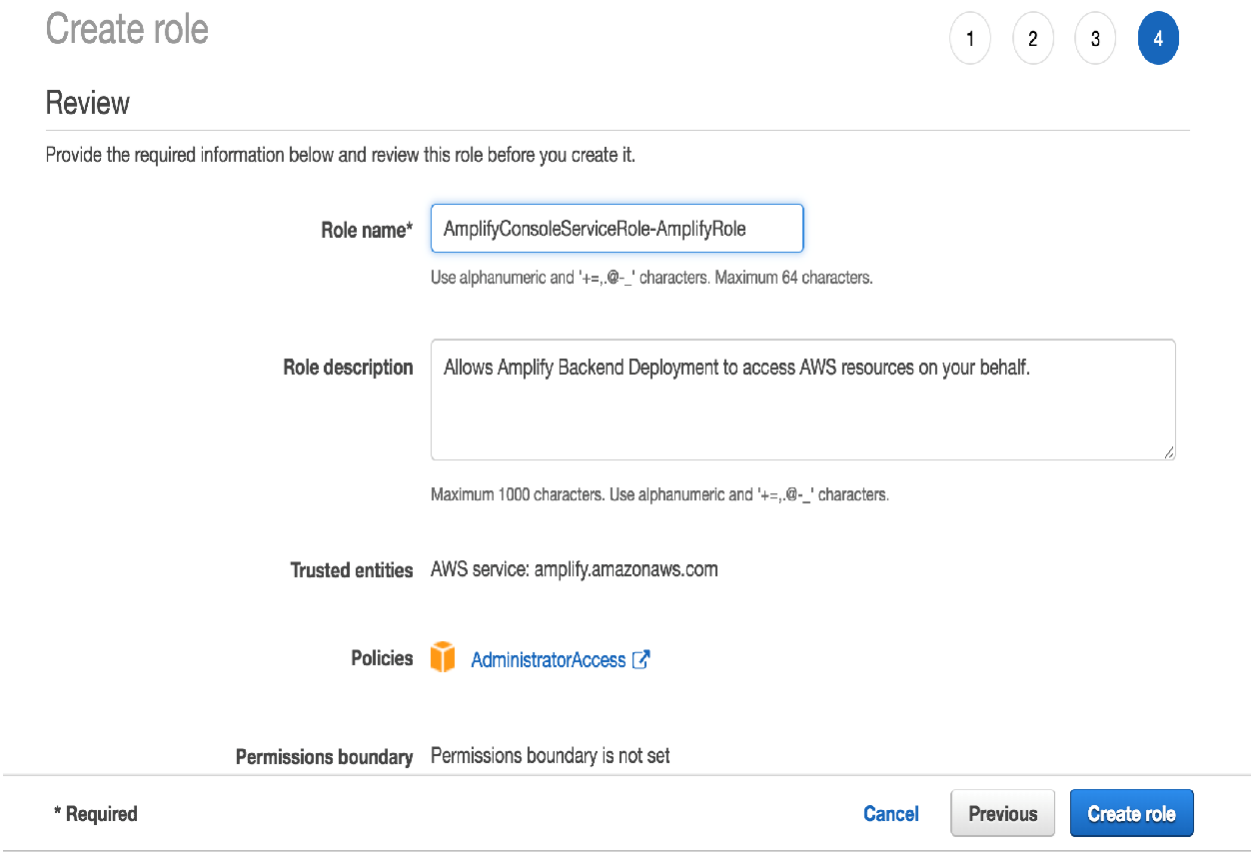
The Amplify Console requires permissions to deploy backend resources with your front end. You use a service role to accomplish this. A service role is the IAM role that Amplify Console assumes when calling other services on your behalf. In this guide, you will create an Amplify service role that has full access to the account which is required to deploy any Amplify CLI resources. Learn more.

Step 1: Login to the IAM Console

Login to the IAM Console and choose **Roles** from the left navigation bar, then choose **Create role**.

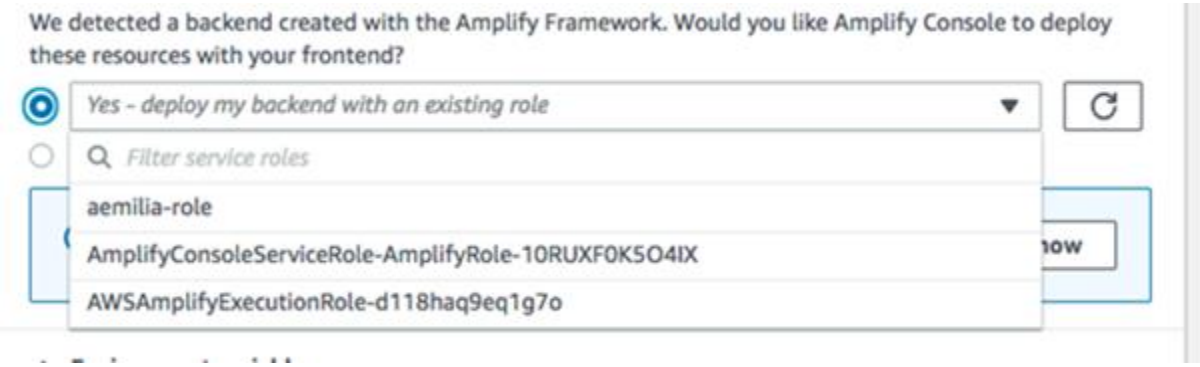
Step 2: Create Amplify role

In the role selection screen find **Amplify** and select the **Amplify-Backend Deployment** role. Accept all the defaults and choose a name for your role (e.g. AmplifyConsoleServiceRole-AmplifyRole).



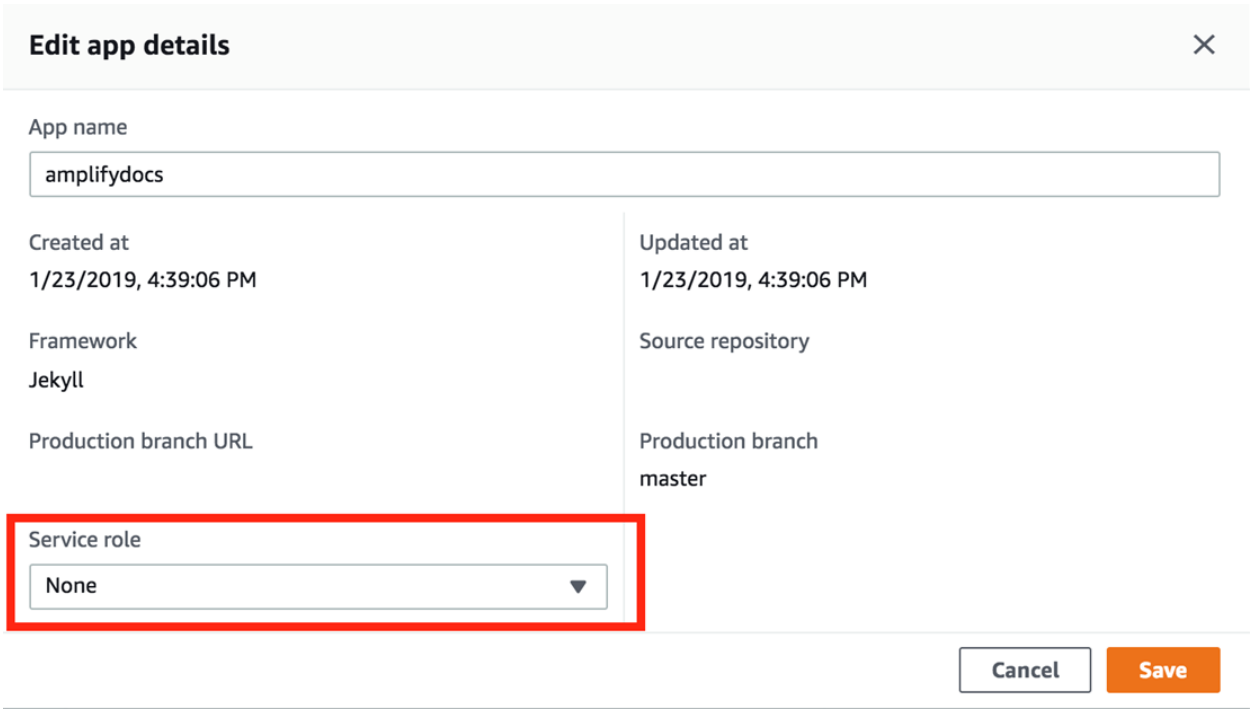
Step 3: Return to the Amplify Console

In the Amplify Console onboarding screen, choose **refresh**, and then pick the role you just created. It should look like **AmplifyConsoleServiceRole-AmplifyRole**.



If you already have an existing app, you can find the service role setting in **App settings** > **General** and then choose **Edit** from the top right corner of the box. Pick the service role you just created from the dropdown and choose **Save**.

The Amplify Console now has permissions to deploy backend resources.



Instant Cache Invalidations

The Amplify Console supports instant cache invalidation of the CDN on every code commit. This enables you to deploy updates to your single page or static app instantly — without giving up the performance benefits of content delivery network (CDN) caching.

Learn more about how the Amplify Console handles cache invalidations.