CREATE THE PRODUCT

What are we going to do?

We have provisioned a detective control to look for AWS RDS Instances that have don't have encryption enabled. We can do better, and create an AWS Service Catalog product that meets the encryption requirement by default using service catalog tools. When users create a new RDS instance using this product, encryption at rest is enabled by default and no further configuration is required.

We are going to perform the following steps:

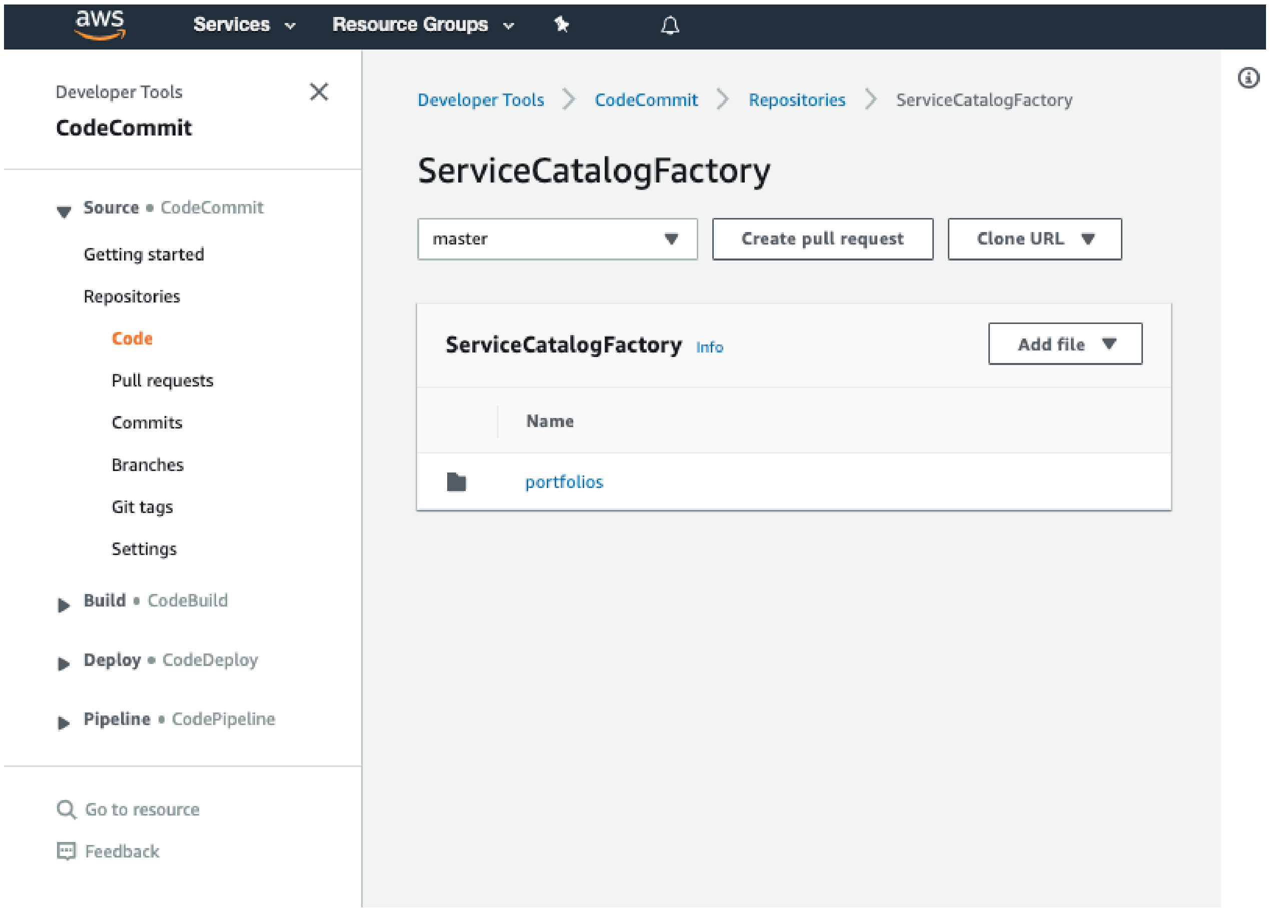
- define a product with a version and a portfolio
- add the source code for our product
- share that portfolio with a spoke account

Step by step guide

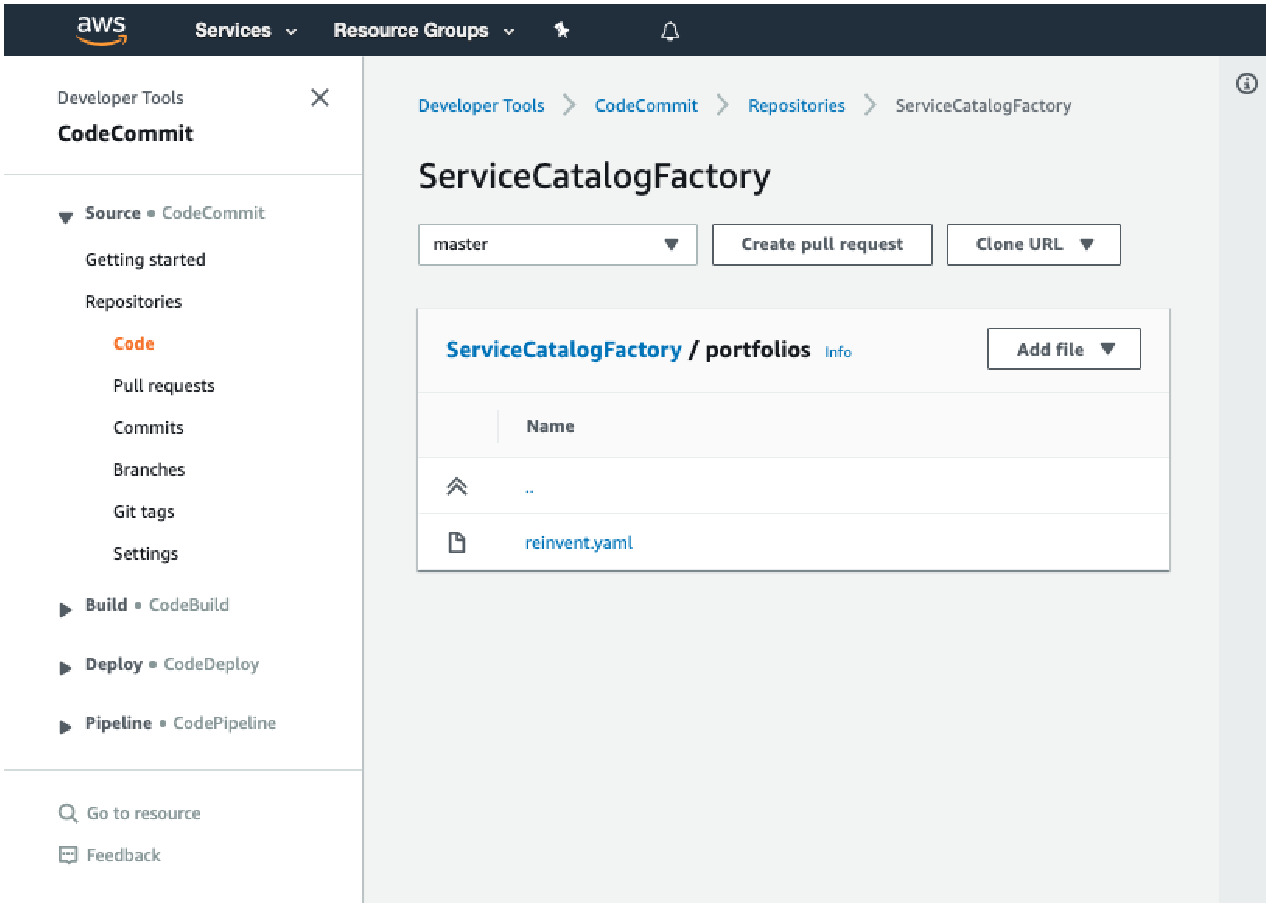
Here are the steps you need to follow to "Create the product"

Define a product with a version and a portfolio

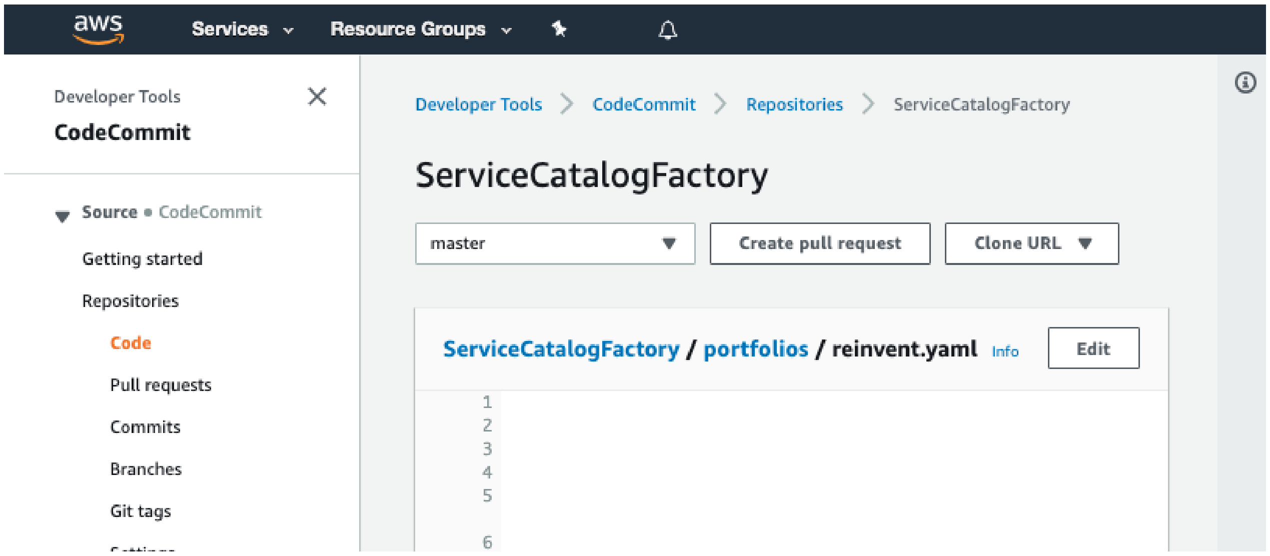
- Navigate to the ServiceCatalogFactory CodeCommit repository again
- Click on *portfolios*



- Click on *reinvent.yaml*



- Click *Edit*



- Add the following to the products section:

```
- Name: "rds-instance"
  Owner: "data-governance@example.com"
  Description: "A compliant RDS Instance you can use that meets
data governance standards"
  Distributor: "cloud-engineering"
  SupportDescription: "Speak to data-governance@example.com about
exceptions and speak to cloud-engineering@example.com about
implementation issues"
  SupportEmail: "cloud-engineering@example.com"
  SupportUrl: "https://wiki.example.com/cloud-engineering/data-
governance/rds-instance"
  Options:
    ShouldCFNNag: True
  Tags:
    - Key: "type"
      Value: "governance"
    - Key: "creator"
      Value: "cloud-engineering"
  Versions:
    - Name: "v1"
      Description: "v1 of rds-instance"
      Active: True
      Source:
        Provider: "CodeCommit"
        Configuration:
          RepositoryName: "rds-instance"
          BranchName: "master"
  Portfolios:
    - "cloud-engineering-self-service"
```

- Add the following to the portfolios section:

```
  - DisplayName: "cloud-engineering-self-service"
    Description: "Portfolio containing products that you can use
to ensure you meet the governance guidelines"
    ProviderName: "cloud-engineering"
    Associations:
      - "arn:aws:iam::${AWS::AccountId}:role/TeamRole"
    Tags:
      - Key: "type"
        Value: "governance"
      - Key: "creator"
        Value: "cloud-engineering"
```

- Once completed it should like look this:

```
Schema: factory-2019-04-01
Products:
  - Name: "aws-config-desired-instance-types"
    Owner: "budget-and-cost-governance@example.com"
    Description: "Enables AWS Config rule - desired-instance-type
with our RIs"
    Distributor: "cloud-engineering"
    SupportDescription: "Speak to budget-and-cost-
governance@example.com about exceptions and speak to cloud-
engineering@example.com about implementation issues"
    SupportEmail: "cloud-engineering@example.com"
    SupportUrl: "https://wiki.example.com/cloud-
engineering/budget-and-cost-governance/aws-config-desired-
instance-types"
    Tags:
      - Key: "type"
        Value: "governance"
      - Key: "creator"
        Value: "cloud-engineering"
      - Key: "cost-center"
        Value: "governance"
    Versions:
      - Name: "v1"
        Description: "v1 of aws-config-desired-instance-types"
        Active: True
        Source:
          Provider: "CodeCommit"
          Configuration:
            RepositoryName: "aws-config-desired-instance-types"
            BranchName: "master"
    Portfolios:
      - "cloud-engineering-governance"

  - Name: "aws-config-rds-storage-encrypted"
    Owner: "data-governance@example.com"
    Description: "Enables AWS Config rule - aws-config-rds-
storage-encrypted"
    Distributor: "cloud-engineering"
    SupportDescription: "Speak to data-governance@example.com
about exceptions and speak to cloud-engineering@example.com about
implementation issues"
    SupportEmail: "cloud-engineering@example.com"
    SupportUrl: "https://wiki.example.com/cloud-engineering/data-
governance/aws-config-rds-storage-encrypted"
    Tags:
      - Key: "type"
        Value: "governance"
      - Key: "creator"
        Value: "cloud-engineering"
      - Key: "cost-center"
        Value: "governance"
    Versions:
      - Name: "v1"
        Description: "v1 of aws-config-rds-storage-encrypted"
        Active: True
        Source:
          Provider: "CodeCommit"
          Configuration:
            RepositoryName: "aws-config-rds-storage-encrypted"
            BranchName: "master"
    Portfolios:
      - "cloud-engineering-governance"

  - Name: "rds-instance"
    Owner: "data-governance@example.com"
    Description: "A compliant RDS Instance you can use that meets
data governance standards"
    Distributor: "cloud-engineering"
    SupportDescription: "Speak to data-governance@example.com
about exceptions and speak to cloud-engineering@example.com about
implementation issues"
    SupportEmail: "cloud-engineering@example.com"
    SupportUrl: "https://wiki.example.com/cloud-engineering/data-
governance/rds-instance"
    Options:
      ShouldCFNNag: True
    Tags:
      - Key: "type"
        Value: "governance"
      - Key: "creator"
        Value: "cloud-engineering"
    Versions:
      - Name: "v1"
        Description: "v1 of rds-instance"
        Active: True
        Source:
          Provider: "CodeCommit"
          Configuration:
            RepositoryName: "rds-instance"
            BranchName: "master"
    Portfolios:
      - "cloud-engineering-self-service"

Portfolios:
  - DisplayName: "cloud-engineering-governance"
    Description: "Portfolio containing the products needed to
govern AWS accounts"
    ProviderName: "cloud-engineering"
    Associations:
      - "arn:aws:iam::${AWS::AccountId}:role/TeamRole"
    Tags:
      - Key: "type"
        Value: "governance"
      - Key: "creator"
        Value: "cloud-engineering"
      - Key: "cost-center"
        Value: "governance"

  - DisplayName: "cloud-engineering-self-service"
    Description: "Portfolio containing products that you can use
to ensure you meet the governance guidelines"
    ProviderName: "cloud-engineering"
    Associations:
      - "arn:aws:iam::${AWS::AccountId}:role/TeamRole"
    Tags:
      - Key: "type"
```

```
          Value: "governance"
        - Key: "creator"
          Value: "cloud-engineering"
```

Note

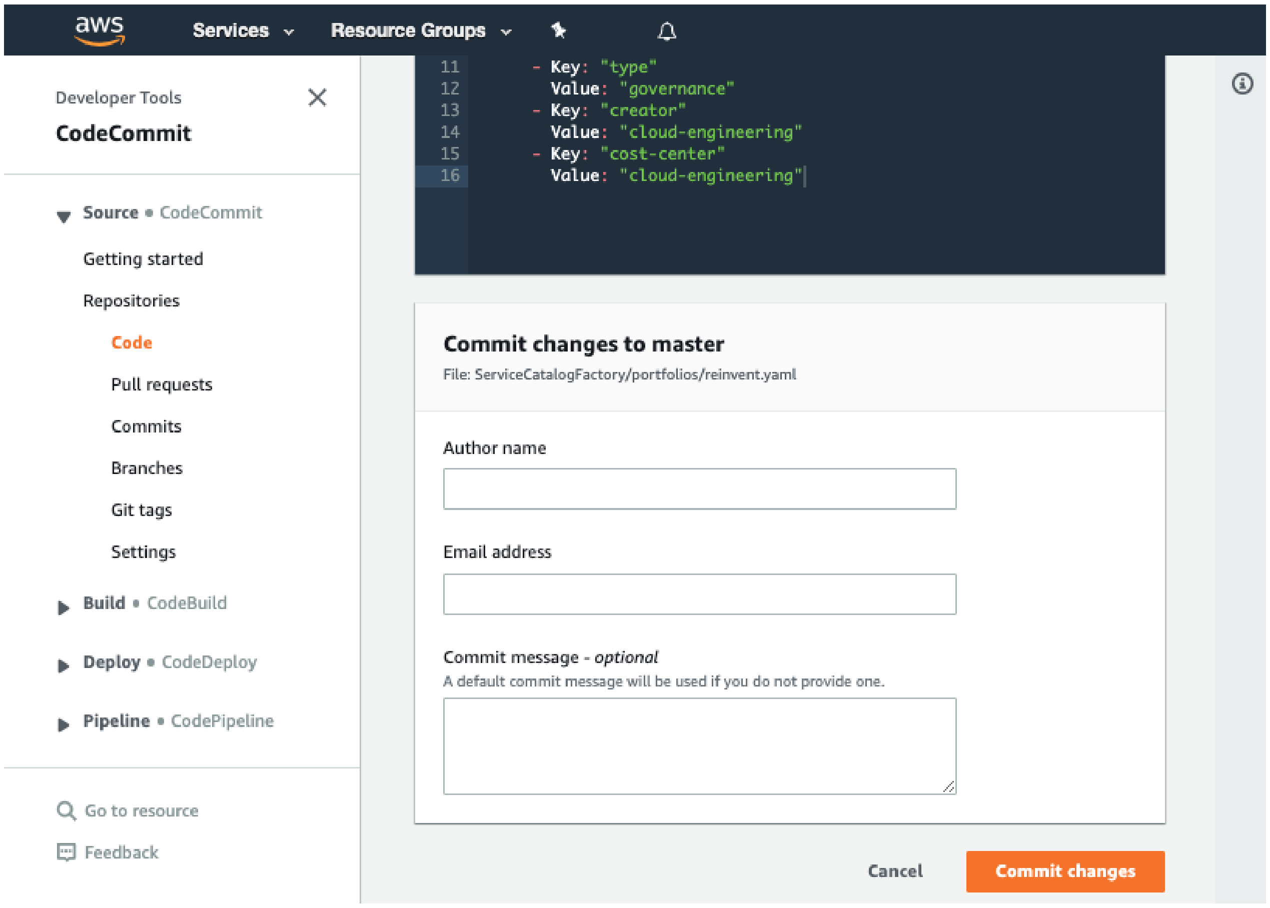
Have a look at the highlighted lines. We are using this to turn on *cfn-nag*, an open source tool by Stelligent that looks for insecure configuration of resources. This will add an extra layer of governance ensuring the AWS CloudFormation templates we are using meets the quality bar set by *cfn-nag*.

- Set your *Author name*
- Set your *Email address*
- Set your *Commit message*

Tip

Using a good / unique commit message will help you understand what is going on later.

- Click the *Commit changes* button:



```
      - Key: "type"
        Value: "governance"
      - Key: "creator"
        Value: "cloud-engineering"
      - Key: "cost-center"
        Value: "cloud-engineering"
```

Commit changes to master

File: ServiceCatalogFactory/portfolios/reinvent.yaml

Author name

Email address

Commit message - *optional*

A default commit message will be used if you do not provide one.

What did we just do?

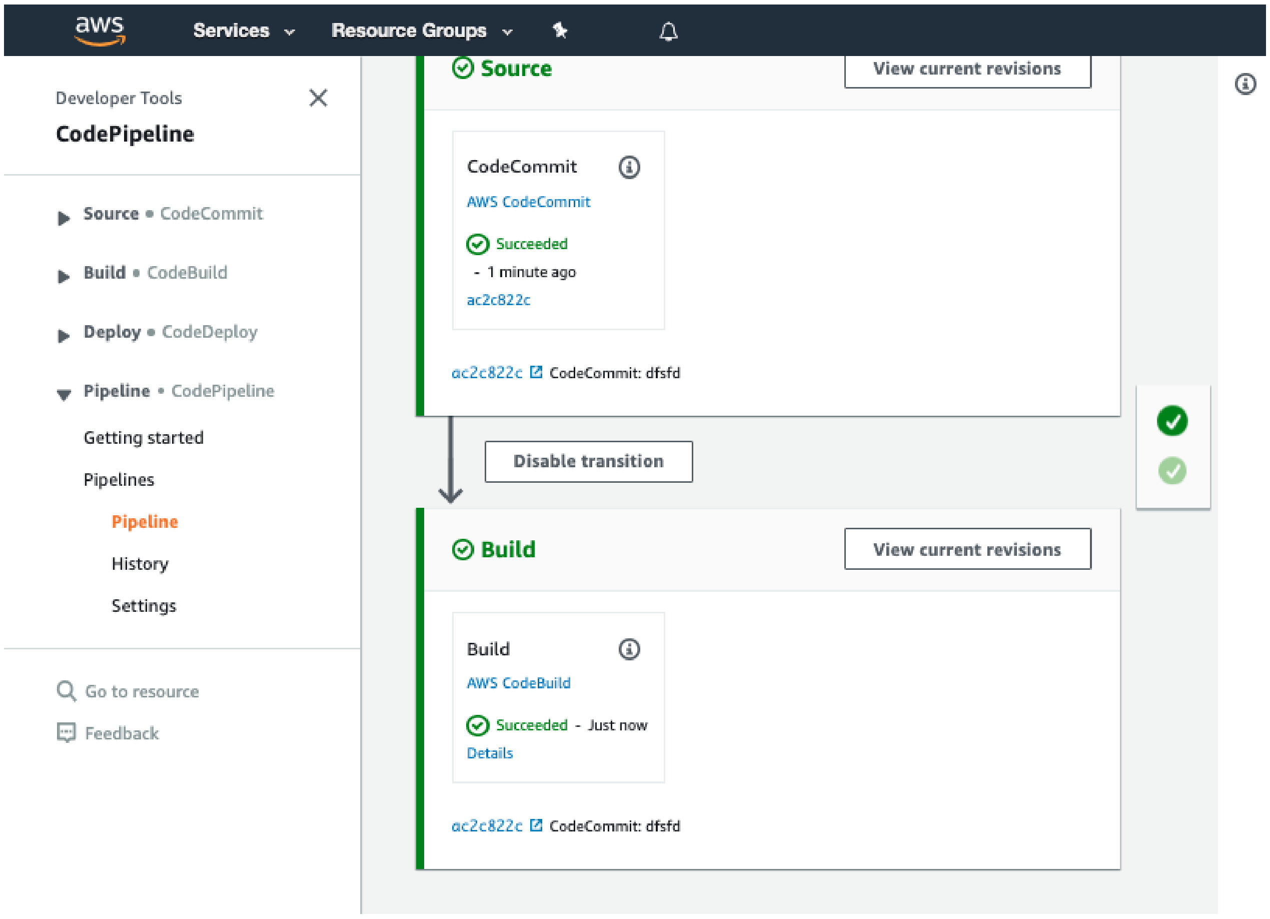
The YAML we pasted in the previous step told the framework to perform several actions:

- create a product named *rds-instance*
- add a *v1* of our product
- create a portfolio named *cloud-engineering-self-service*
- add the product: *rds-instance* to the portfolio: *cloud-engineering-self-service*

Verify the change worked

Once you have made your changes the ServiceCatalogFactory Pipeline should have run. If you were very quick, the pipeline may still be running. If it has not yet started feel free to the hit the *Release change* button.

Once it has completed it should show the *Source* and *Build* stages in green to indicate they have completed successfully:



Note

If this is failing please raise your hand for some assistance

Add the source code for our product

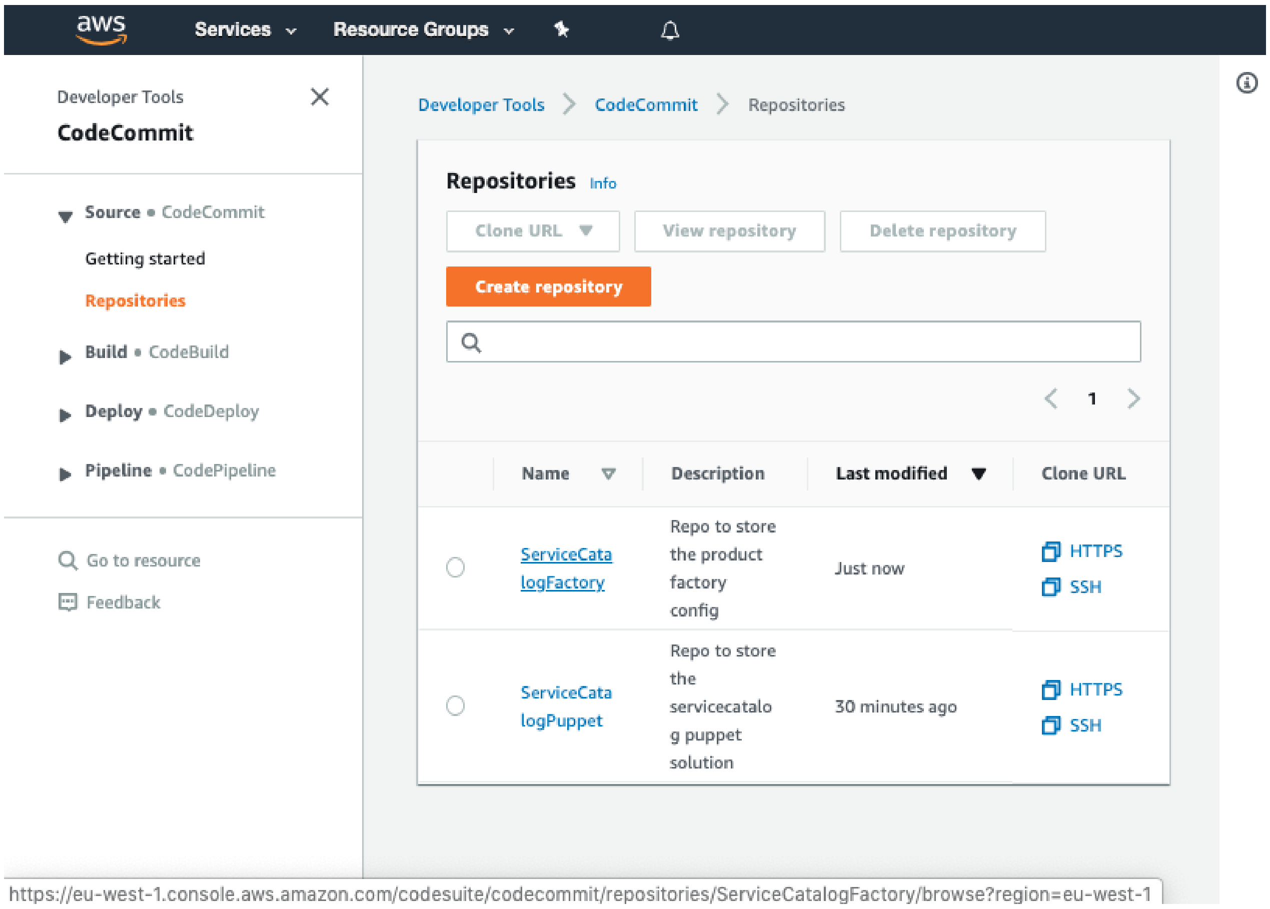
When you configured your product version, you specified the following version:

```
Versions:
  - Name: "v1"
    Description: "v1 of rds-instance"
    Active: True
    Source:
      Provider: "CodeCommit"
      Configuration:
        RepositoryName: "rds-instance"
        BranchName: "master"
```

This tells the framework the source code for the product comes from the *master* branch of a *CodeCommit* repository of the name *rds-instance*.

We now need to create the CodeCommit repository and add the AWS CloudFormation template we are going to use for our product.

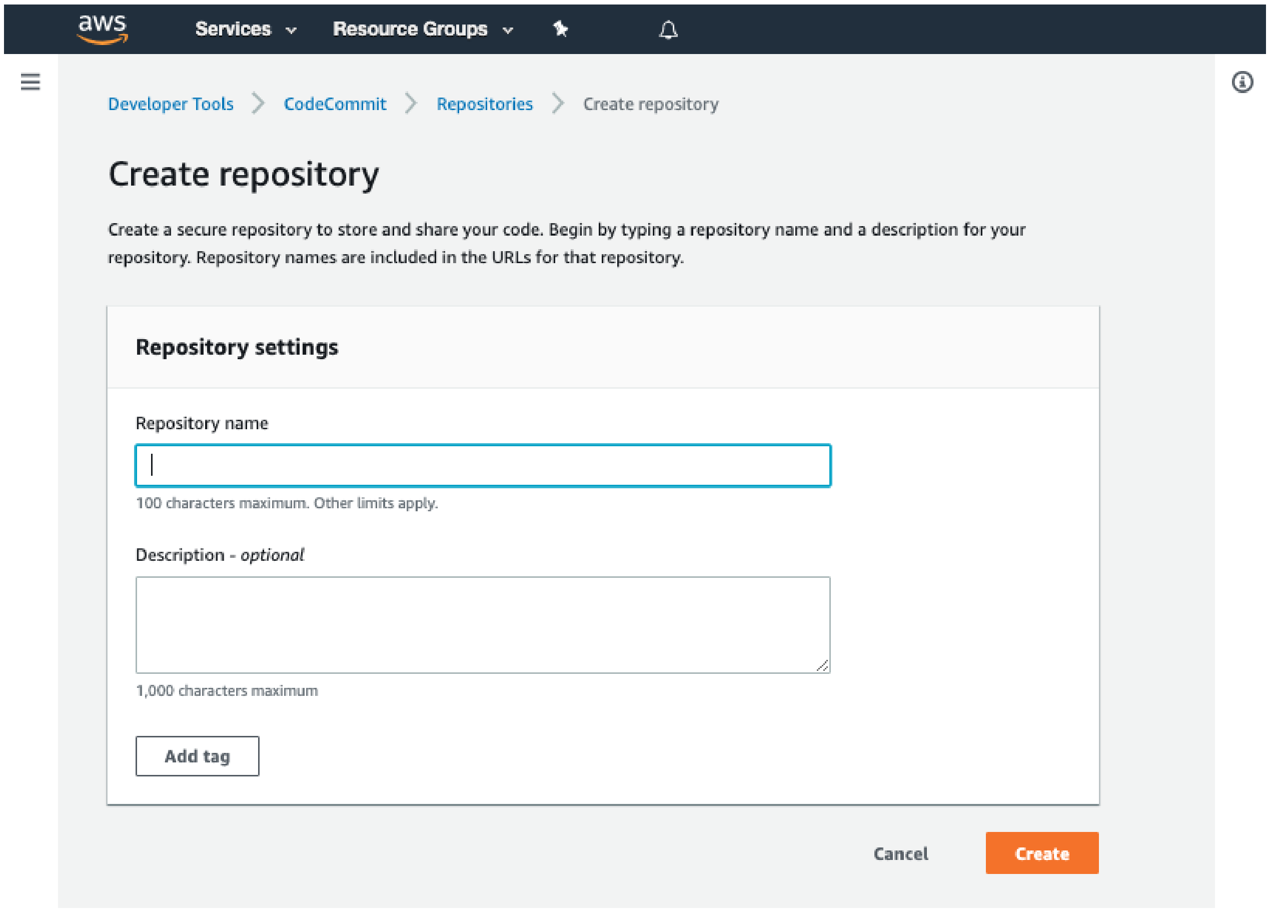
- Navigate to AWS CodeCommit
- Click *Create repository*



	Name	Description	Last modified	Clone URL
○	ServiceCatalogFactory	Repo to store the product factory config	Just now	HTTPS SSH
○	ServiceCatalogPuppet	Repo to store the servicecatalog puppet solution	30 minutes ago	HTTPS SSH

https://eu-west-1.console.aws.amazon.com/codesuite/codecommit/repositories/ServiceCatalogFactory/browse?region=eu-west-1

- Input the name `rds-instance`


aws
Services
Resource Groups
Developer Tools > CodeCommit > Repositories > Create repository

Create repository

Create a secure repository to store and share your code. Begin by typing a repository name and a description for your repository. Repository names are included in the URLs for that repository.

Repository settings

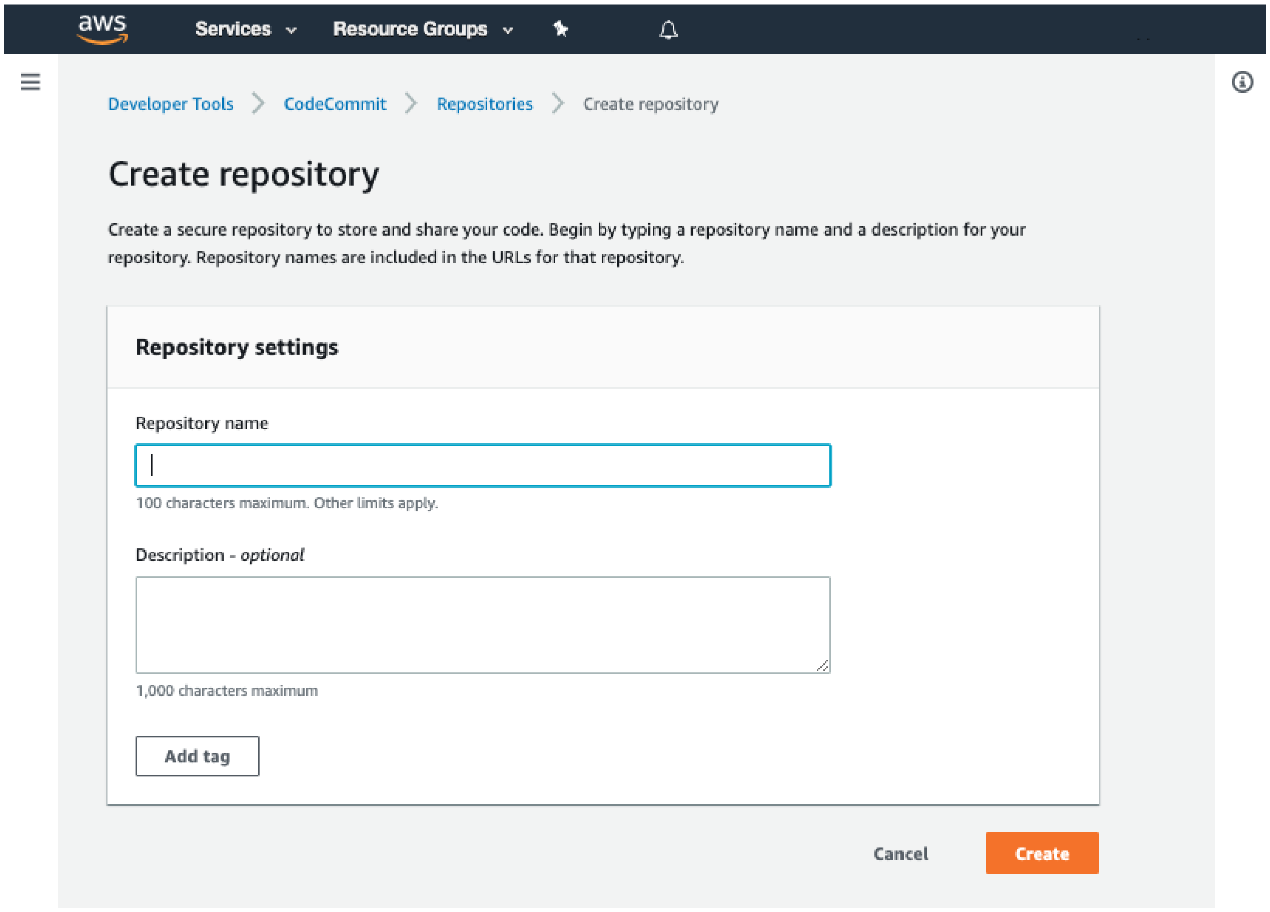
Repository name

100 characters maximum. Other limits apply.

Description - *optional*

1,000 characters maximum

- Click *Create*



Create repository

Create a secure repository to store and share your code. Begin by typing a repository name and a description for your repository. Repository names are included in the URLs for that repository.

Repository settings

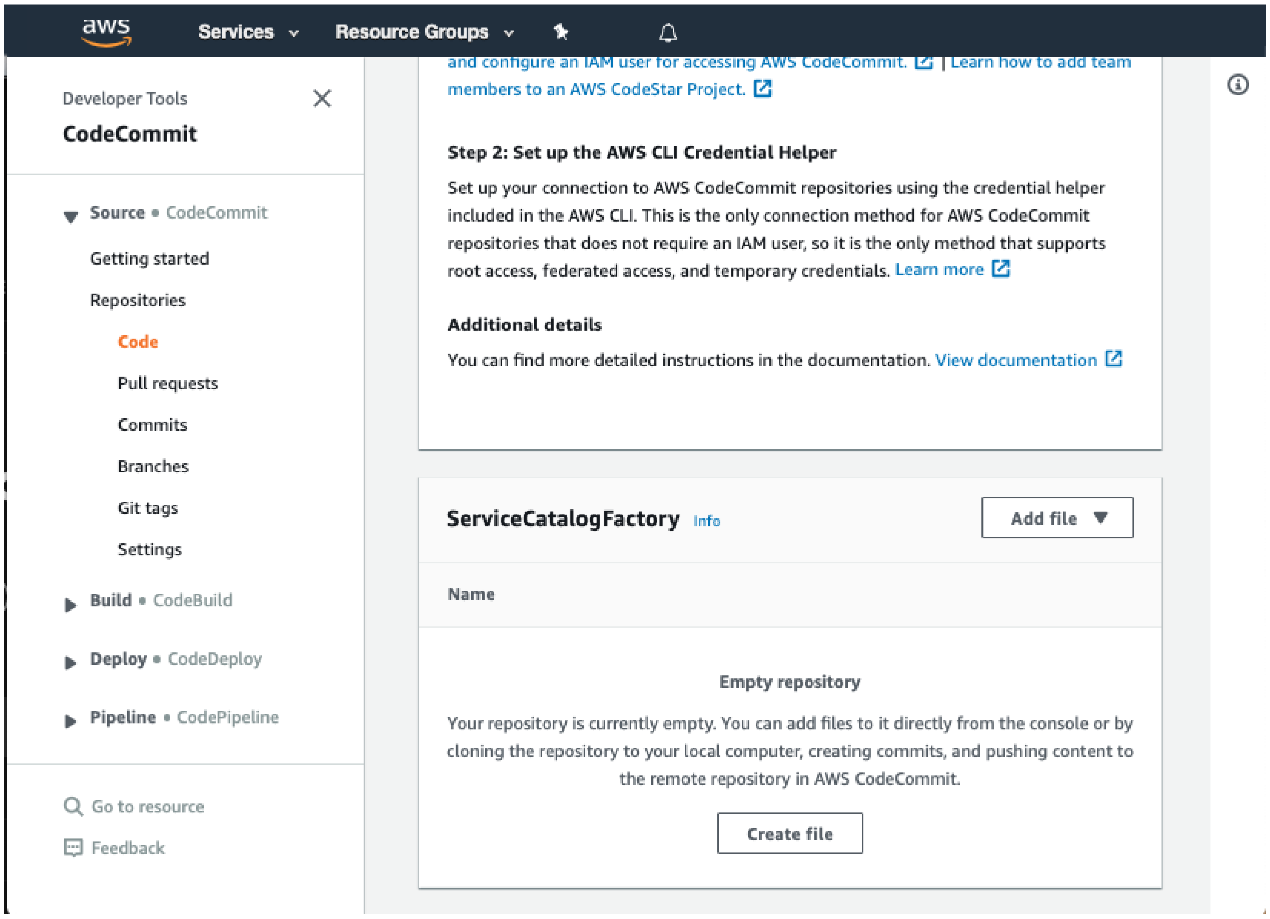
Repository name

100 characters maximum. Other limits apply.

Description - *optional*

1,000 characters maximum

- Scroll down to the bottom of the page and hit the *Create file* button



and configure an IAM user for accessing AWS CodeCommit. | Learn how to add team members to an AWS CodeStar Project.

Step 2: Set up the AWS CLI Credential Helper

Set up your connection to AWS CodeCommit repositories using the credential helper included in the AWS CLI. This is the only connection method for AWS CodeCommit repositories that does not require an IAM user, so it is the only method that supports root access, federated access, and temporary credentials. Learn more

Additional details

You can find more detailed instructions in the documentation. View documentation

ServiceCatalogFactory Info

Add file

Name

Empty repository

Your repository is currently empty. You can add files to it directly from the console or by cloning the repository to your local computer, creating commits, and pushing content to the remote repository in AWS CodeCommit.

Create file

- Copy the following snippet into the main input field:

```
AWSTemplateFormatVersion: 2010-09-09
Description: "RDS Storage Encrypted"

Parameters:
  RdsDbMasterUsername:
    Description: RdsDbMasterUsername
    Type: String
    Default: someuser

  RdsDbMasterUserPassword:
      Description: RdsDbMasterUserPassword
      Type: String
      NoEcho: true

  RdsDbDatabaseName:
    Description: DbDatabaseName
    Type: String
    Default: mysql57_database

Resources:
  VPC:
    Type: AWS::EC2::VPC
    Properties:
      CidrBlock: 10.0.0.0/16
      EnableDnsSupport: 'false'
      EnableDnsHostnames: 'false'

  Subnet1:
    Type: AWS::EC2::Subnet
    Properties:
      VpcId:
        Ref: VPC
      CidrBlock: 10.0.0.0/24
      AvailabilityZone: !Select [0, !GetAZs {Ref: 'AWS::Region'}]

  Subnet2:
    Type: AWS::EC2::Subnet
    Properties:
      VpcId:
        Ref: VPC
      CidrBlock: 10.0.1.0/24
      AvailabilityZone: !Select [1, !GetAZs {Ref: 'AWS::Region'}]

  RdsDbSubnetGroup:
    Type: AWS::RDS::DBSubnetGroup
    Properties:
      DBSubnetGroupDescription: Database subnets for RDS
      SubnetIds:
        - !Ref Subnet1
        - !Ref Subnet2

  RdsSecurityGroup:
    Type: AWS::EC2::SecurityGroup
    Description: Used to grant access to and from the VPC
    Properties:
      VpcId: !Ref VPC
      GroupDescription: Allow MySQL (TCP3306) access to and from
the VPC
      SecurityGroupIngress:
        - IpProtocol: tcp
          FromPort: 3306
          ToPort: 3306
          CidrIp: 10.0.0.0/32
      SecurityGroupEgress:
        - IpProtocol: tcp
          FromPort: 3306
          ToPort: 3306
          CidrIp: 10.0.0.0/32

  RdsDbClusterParameterGroup:
    Type: AWS::RDS::DBClusterParameterGroup
    Properties:
      Description: CloudFormation Aurora Cluster Parameter Group
      Family: aurora-mysql5.7
      Parameters:
        server_audit_logging: 0
        server_audit_events:
'CONNECT,QUERY,QUERY_DCL,QUERY_DDL,QUERY_DML,TABLE'

  RdsDbCluster:
    Type: AWS::RDS::DBCluster
    Properties:
      DBSubnetGroupName: !Ref RdsDbSubnetGroup
      MasterUsername: !Ref RdsDbMasterUsername
      MasterUserPassword: !Ref RdsDbMasterUserPassword
      DatabaseName: !Ref RdsDbDatabaseName
      Engine: aurora-mysql
      VpcSecurityGroupIds:
        - !Ref RdsSecurityGroup
      DBClusterIdentifier : !Sub '${AWS::StackName}-dbcluster'
      DBClusterParameterGroupName: !Ref RdsDbClusterParameterGroup
      PreferredBackupWindow: 18:05-18:35

  RdsDbParameterGroup:
    Type: AWS::RDS::DBParameterGroup
    Properties:
      Description: CloudFormation Aurora Parameter Group
      Family: aurora-mysql5.7
      Parameters:
        aurora_lab_mode: 0
        general_log: 1
        slow_query_log: 1
        long_query_time: 10

  RdsDbInstance:
    Type: AWS::RDS::DBInstance
    Properties:
      DBSubnetGroupName: !Ref RdsDbSubnetGroup
      DBParameterGroupName: !Ref RdsDbParameterGroup
      Engine: aurora-mysql
      DBClusterIdentifier: !Ref RdsDbCluster
      AutoMinorVersionUpgrade: 'true'
      PubliclyAccessible: 'false'
      PreferredMaintenanceWindow: Thu:19:05-Thu:19:35
      AvailabilityZone: !Select [0, !GetAZs {Ref: 'AWS::Region'}]
      DBInstanceClass: 'db.t2.small'
```

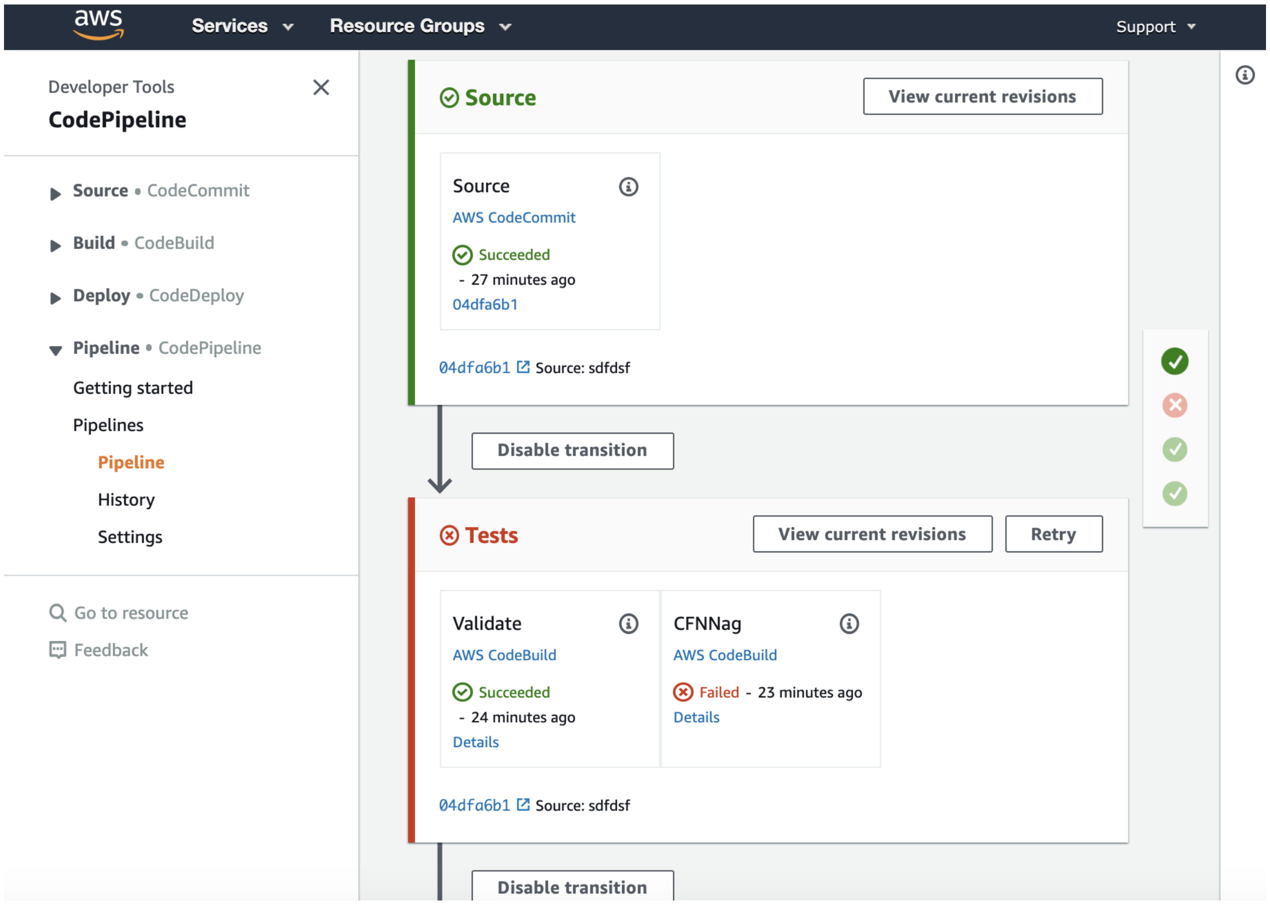
- Set the *File name* to `product.template.yaml`
- Set your *Author name*
- Set your *Email address*
- Set your *Commit message*
- Click *Commit changes*

Tip

Using a good / unique commit message will help you understand what is going on later.

Creating that file should trigger your rds-instance-v1-pipeline.

Once the pipeline has completed it should show the *Source* stage in green to indicate it has completed successfully but it should show the CFNNag action within the Tests stage as failing:



Clicking the *Details* link within the CFNNag box will bring you to the AWS CodeBuild project. When you scroll near to the bottom of that page you should see an error:

```
·[0;31;49m| FAIL F26·[0m
·[0;31;49m|·[0m
·[0;31;49m| Resources: ["RdsDbCluster"]·[0m
·[0;31;49m| Line Numbers: [84]·[0m
·[0;31;49m|·[0m
·[0;31;49m| RDS DBCluster should have StorageEncrypted enabled·[0m
```

CFNNag has determined you are not applying encryption to your DBCluster. This is a violation of the data governance guidelines and so we need to fix it.

- Go to AWS CodeCommit
- Click on the *rds-instance* repository
- Click on *product.template.yaml*
- Click on edit
- Replace the contents with this:

```yaml
AWSTemplateFormatVersion: 2010-09-09
Description: "RDS Storage Encrypted"

Parameters:
  RdsDbMasterUsername:
    Description: RdsDbMasterUsername
    Type: String
    Default: someuser

  RdsDbMasterUserPassword:
      Description: RdsDbMasterUserPassword
      Type: String
      NoEcho: true

  RdsDbDatabaseName:
    Description: DbDatabaseName
    Type: String
    Default: mysql57_database

Resources:
  VPC:
    Type: AWS::EC2::VPC
    Properties:
      CidrBlock: 10.0.0.0/16
      EnableDnsSupport: 'false'
      EnableDnsHostnames: 'false'

  Subnet1:
    Type: AWS::EC2::Subnet
    Properties:
      VpcId:
        Ref: VPC
      CidrBlock: 10.0.0.0/24
      AvailabilityZone: !Select [0, !GetAZs {Ref: 'AWS::Region'}]

  Subnet2:
    Type: AWS::EC2::Subnet
    Properties:
      VpcId:
        Ref: VPC
      CidrBlock: 10.0.1.0/24
      AvailabilityZone: !Select [1, !GetAZs {Ref: 'AWS::Region'}]
  RdsDbSubnetGroup:
    Type: AWS::RDS::DBSubnetGroup
    Properties:
      DBSubnetGroupDescription: Database subnets for RDS
      SubnetIds:
        - !Ref Subnet1
        - !Ref Subnet2

  RdsSecurityGroup:
    Type: AWS::EC2::SecurityGroup
    Description: Used to grant access to and from the VPC
    Properties:
      VpcId: !Ref VPC
      GroupDescription: Allow MySQL (TCP3306) access to and from
the VPC
      SecurityGroupIngress:
        - IpProtocol: tcp
          FromPort: 3306
          ToPort: 3306
          CidrIp: 10.0.0.0/32
      SecurityGroupEgress:
        - IpProtocol: tcp
          FromPort: 3306
          ToPort: 3306
          CidrIp: 10.0.0.0/32

  RdsDbClusterParameterGroup:
    Type: AWS::RDS::DBClusterParameterGroup
    Properties:
      Description: CloudFormation Aurora Cluster Parameter Group
      Family: aurora-mysql5.7
      Parameters:
        server_audit_logging: 0
        server_audit_events:
'CONNECT,QUERY,QUERY_DCL,QUERY_DDL,QUERY_DML,TABLE'

  RdsDbCluster:
    Type: AWS::RDS::DBCluster
    Properties:
      DBSubnetGroupName: !Ref RdsDbSubnetGroup
      MasterUsername: !Ref RdsDbMasterUsername
      MasterUserPassword: !Ref RdsDbMasterUserPassword
      DatabaseName: !Ref RdsDbDatabaseName
      Engine: aurora-mysql
      VpcSecurityGroupIds:
        - !Ref RdsSecurityGroup
      DBClusterIdentifier : !Sub '${AWS::StackName}-dbcluster'
      DBClusterParameterGroupName: !Ref RdsDbClusterParameterGroup
      PreferredBackupWindow: 18:05-18:35
      StorageEncrypted: True

  RdsDbParameterGroup:
    Type: AWS::RDS::DBParameterGroup
    Properties:
      Description: CloudFormation Aurora Parameter Group
      Family: aurora-mysql5.7
      Parameters:
        aurora_lab_mode: 0
        general_log: 1
        slow_query_log: 1
        long_query_time: 10

  RdsDbInstance:
    Type: AWS::RDS::DBInstance
    Properties:
      DBSubnetGroupName: !Ref RdsDbSubnetGroup
      DBParameterGroupName: !Ref RdsDbParameterGroup
      Engine: aurora-mysql
      DBClusterIdentifier: !Ref RdsDbCluster
      AutoMinorVersionUpgrade: 'true'
      PubliclyAccessible: 'false'
      PreferredMaintenanceWindow: Thu:19:05-Thu:19:35
      AvailabilityZone: !Select [0, !GetAZs {Ref: 'AWS::Region'}]
      DBInstanceClass: 'db.t2.small'
      StorageEncrypted: True
```

Please observe the highlighted lines showing where we have made a change. We have added:

```
StorageEncrypted: True
```

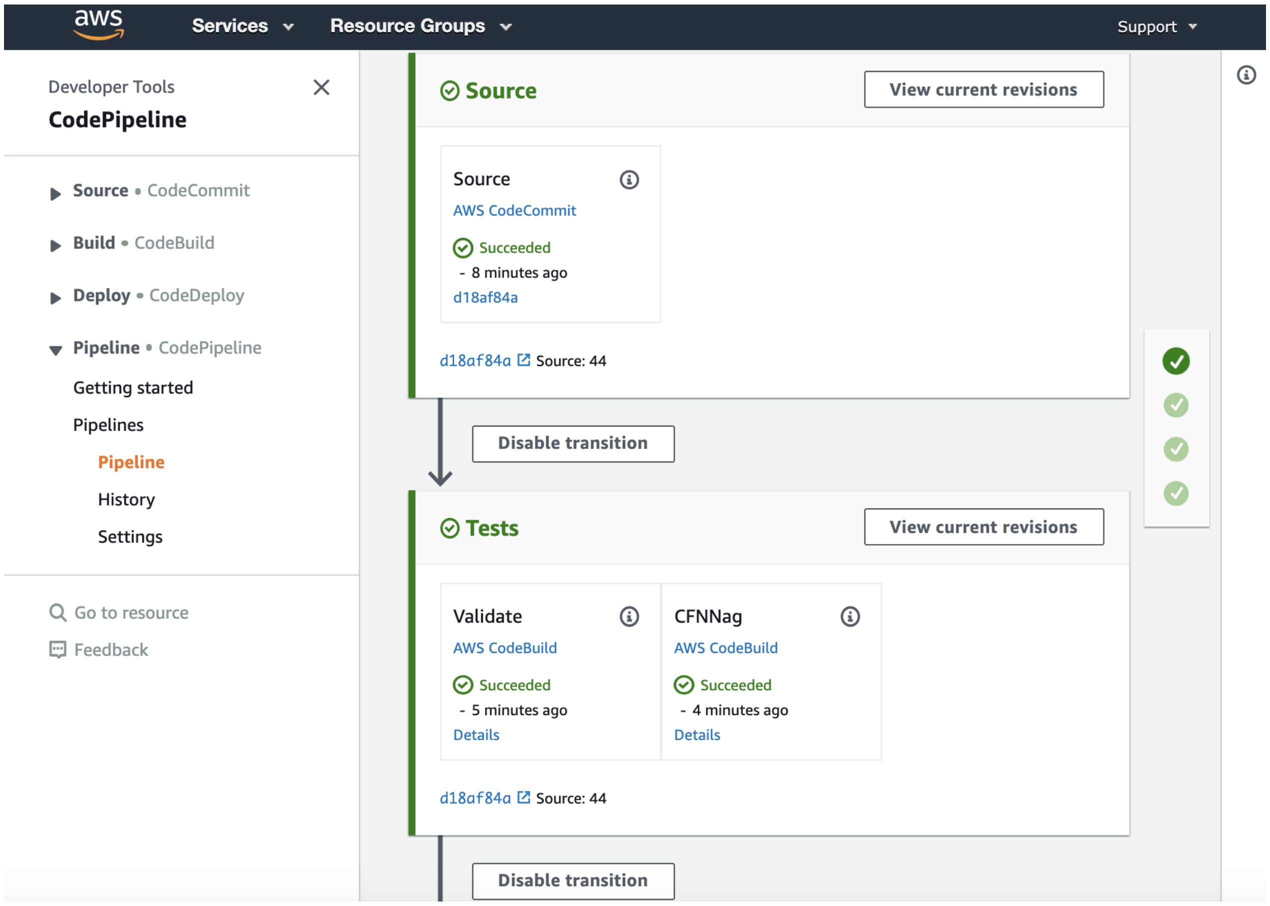
- Set your *Author name*
- Set your *Email address*
- Set your *Commit message*
- Click *Commit changes*

Tip

Using a good / unique commit message will help you understand what is going on later.

Creating that file should trigger your rds-instance-v1-pipeline.

Once the pipeline has completed it should show the *Source* and *Tests* stages in green to indicate they have completed successfully:



Tip

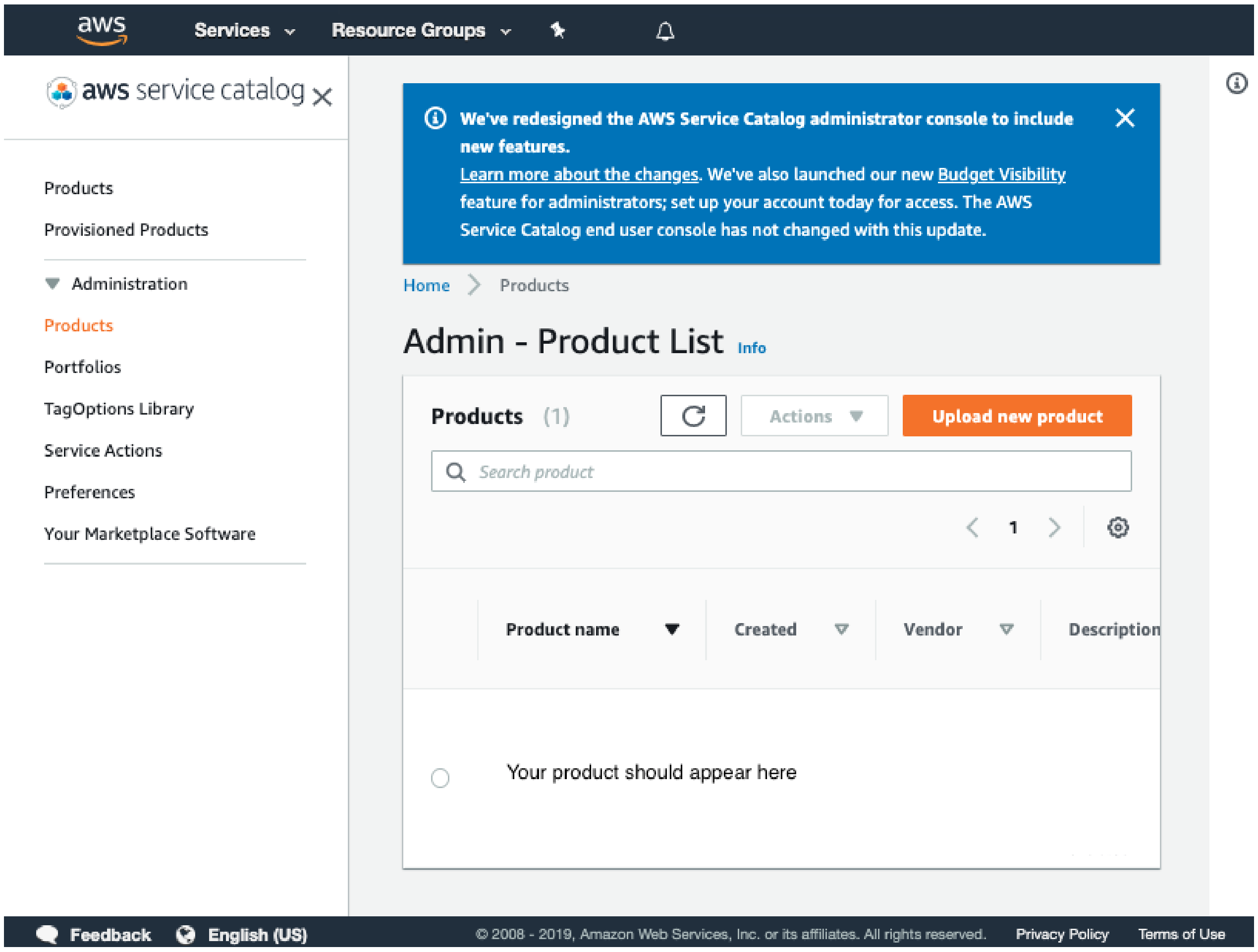
You should see your commit message on this screen, it will help you know which version of ServiceCatalogFactory repository the pipeline is processing.

Note

If this is failing please raise your hand for some assistance

Once you have verified the pipeline has run you can go to Service Catalog products to view your newly created version.

You should see the product you created listed:



We've redesigned the AWS Service Catalog administrator console to include new features.
Learn more about the changes. We've also launched our new Budget Visibility feature for administrators; set up your account today for access. The AWS Service Catalog end user console has not changed with this update.

Admin - Product List

Products (1)

Product name	Created	Vendor	Description
Your product should appear here			

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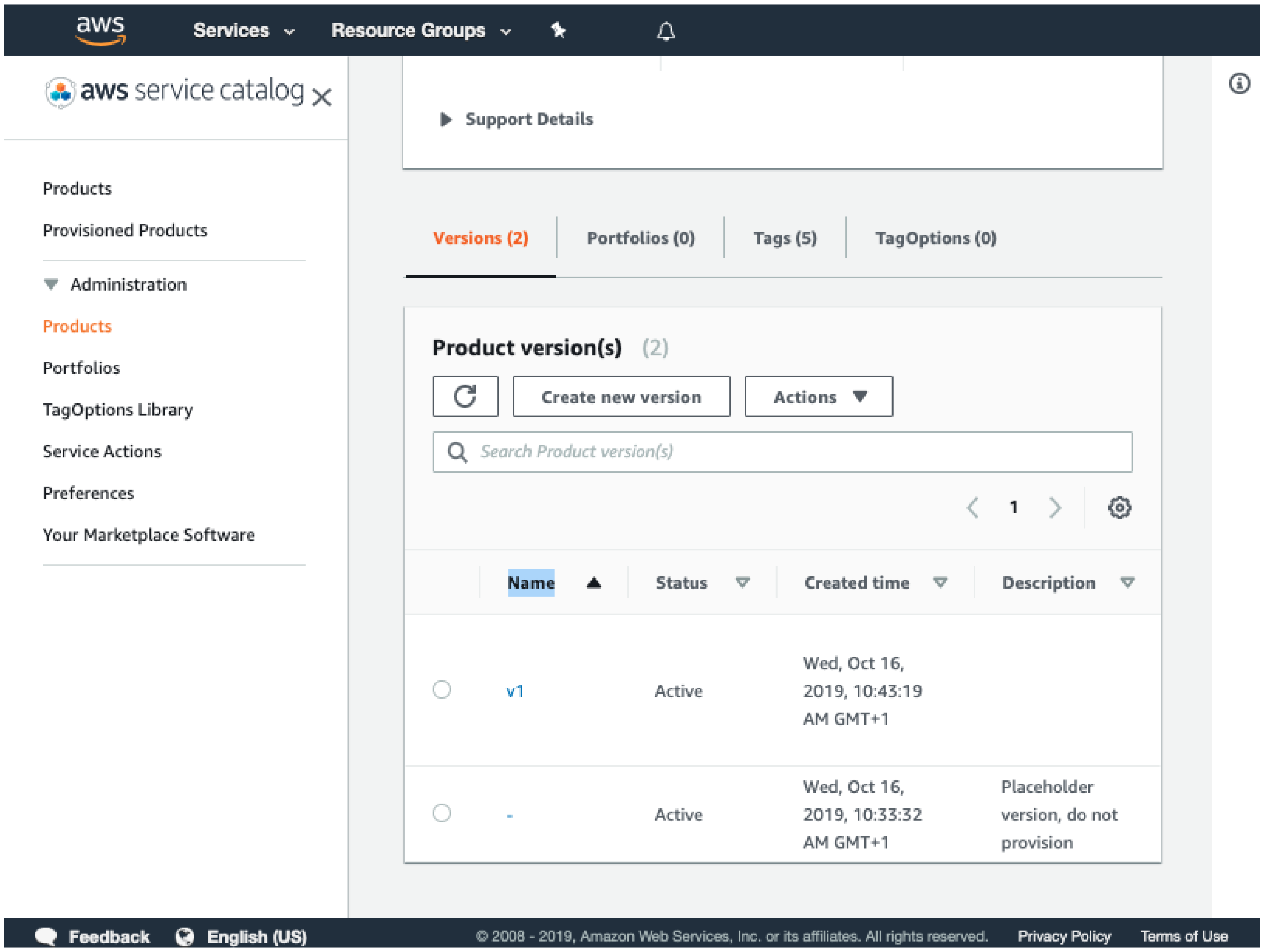
Click on the product and verify *v1* is there



Product version(s) (2)

	Name	Status	Created time	Description
○	v1	Active	Wed, Oct 16, 2019, 10:43:19 AM GMT+1	
○	-	Active	Wed, Oct 16, 2019, 10:33:32 AM GMT+1	Placeholder version, do not provision

Note

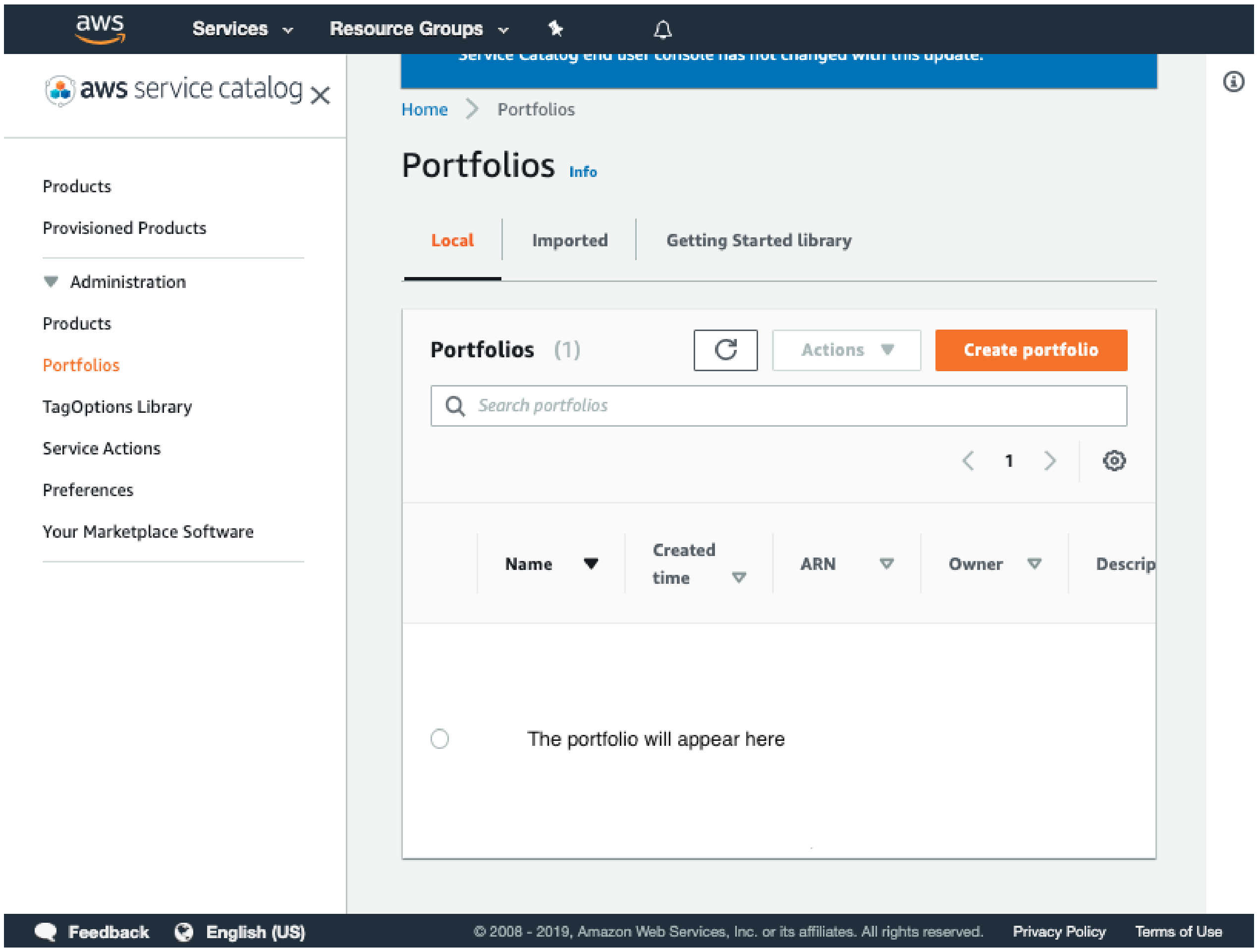
If you cannot see your version please raise your hand for some assistance

You have now successfully created a version for your product!

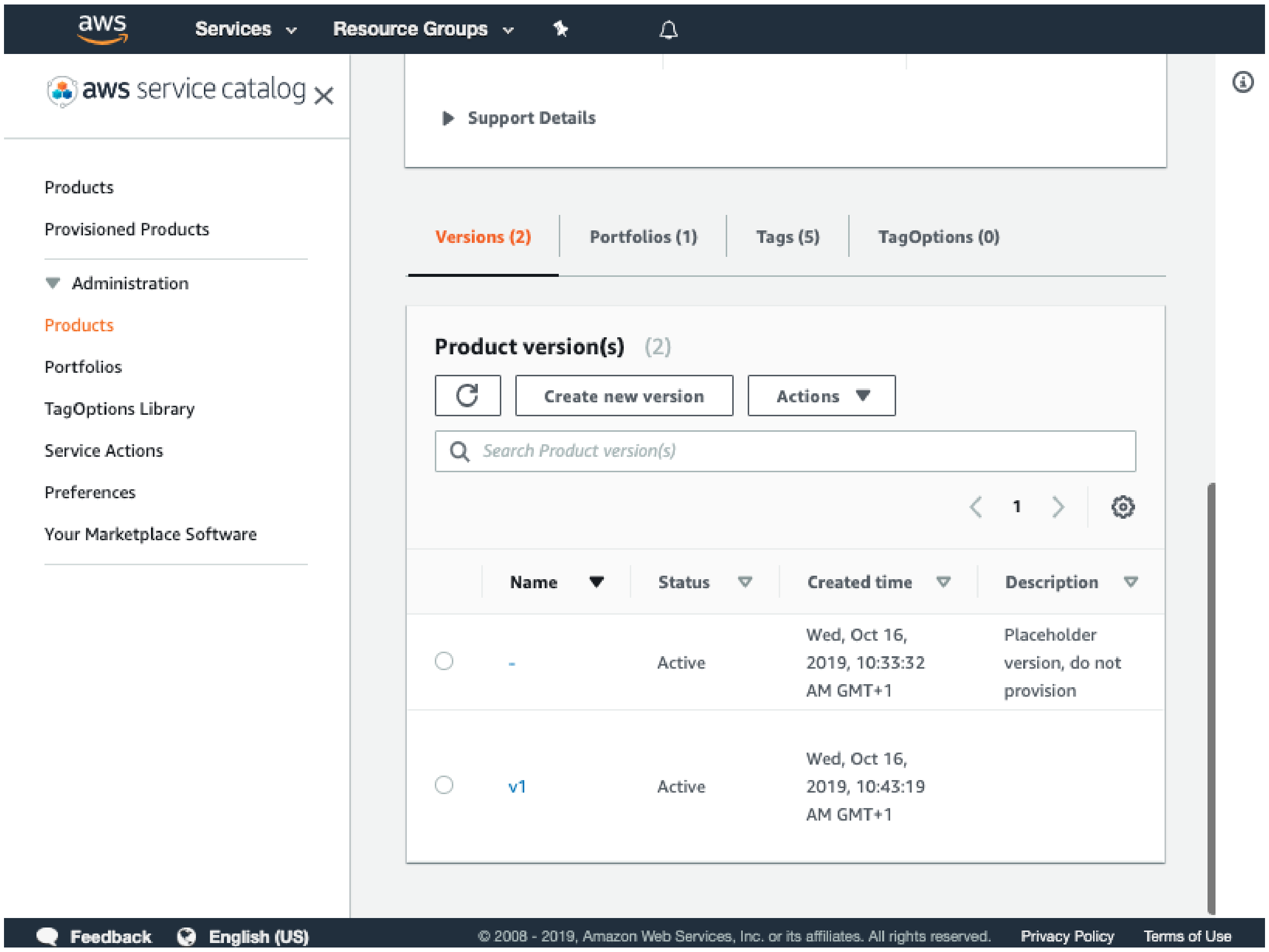
Verify that the product was added to the portfolio

Now that you have verified the pipeline has run you can go to Service Catalog portfolios to view your portfolio.

- Click on *cloud-engineering-self-service*



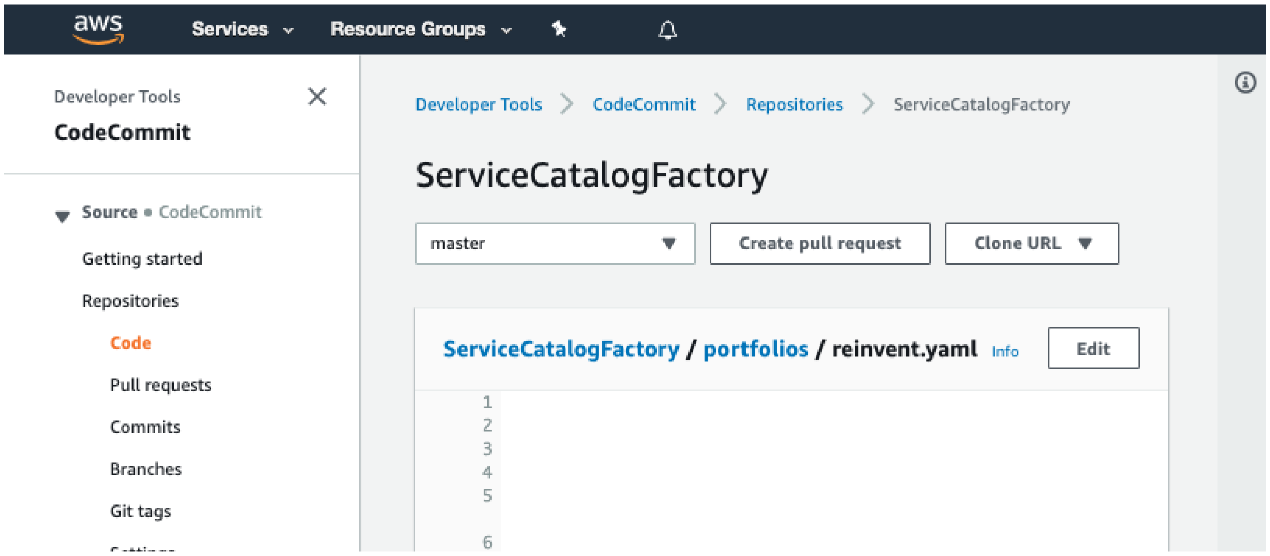
- Click on the product *rds-instance*
- Click on the version *v1*



	Name	Status	Created time	Description
○	-	Active	Wed, Oct 16, 2019, 10:33:32 AM GMT+1	Placeholder version, do not provision
○	v1	Active	Wed, Oct 16, 2019, 10:43:19 AM GMT+1	

Share portfolio with a spoke account

- Navigate to the ServiceCatalogPuppet CodeCommit repository again
- Click on *manifest.yaml*
- Click *Edit*



- Append the following snippet to the YAML document in the main input field (be careful with your indentation):

```
spoke-local-portfolios:
  cloud-engineering-self-service:
    portfolio: "reinvent-cloud-engineering-self-service"
    deploy_to:
      tags:
        - tag: "type:prod"
          regions: "default_region"
```

- The main input field should look like this:

```
accounts:
  - account_id: "<YOUR_ACCOUNT_ID_WITHOUT_HYPHENS>"
    name: "puppet-account"
    default_region: "eu-west-1"
    regions_enabled:
      - "eu-west-1"
      - "eu-west-2"
    tags:
      - "type:prod"
      - "partition:eu"

launches:
  aws-config-desired-instance-types:
    portfolio: "reinvent-cloud-engineering-governance"
    product: "aws-config-desired-instance-types"
    version: "v1"
    parameters:
      InstanceType:
        default: "t2.medium, t2.large, t2.xlarge"
    deploy_to:
      tags:
        - tag: "type:prod"
          regions: "default_region"
  aws-config-rds-storage-encrypted:
    portfolio: "reinvent-cloud-engineering-governance"
    product: "aws-config-rds-storage-encrypted"
    version: "v1"
    deploy_to:
      tags:
        - tag: "type:prod"
          regions: "default_region"

spoke-local-portfolios:
  cloud-engineering-self-service:
    portfolio: "reinvent-cloud-engineering-self-service"
    deploy_to:
      tags:
        - tag: "type:prod"
          regions: "default_region"
```

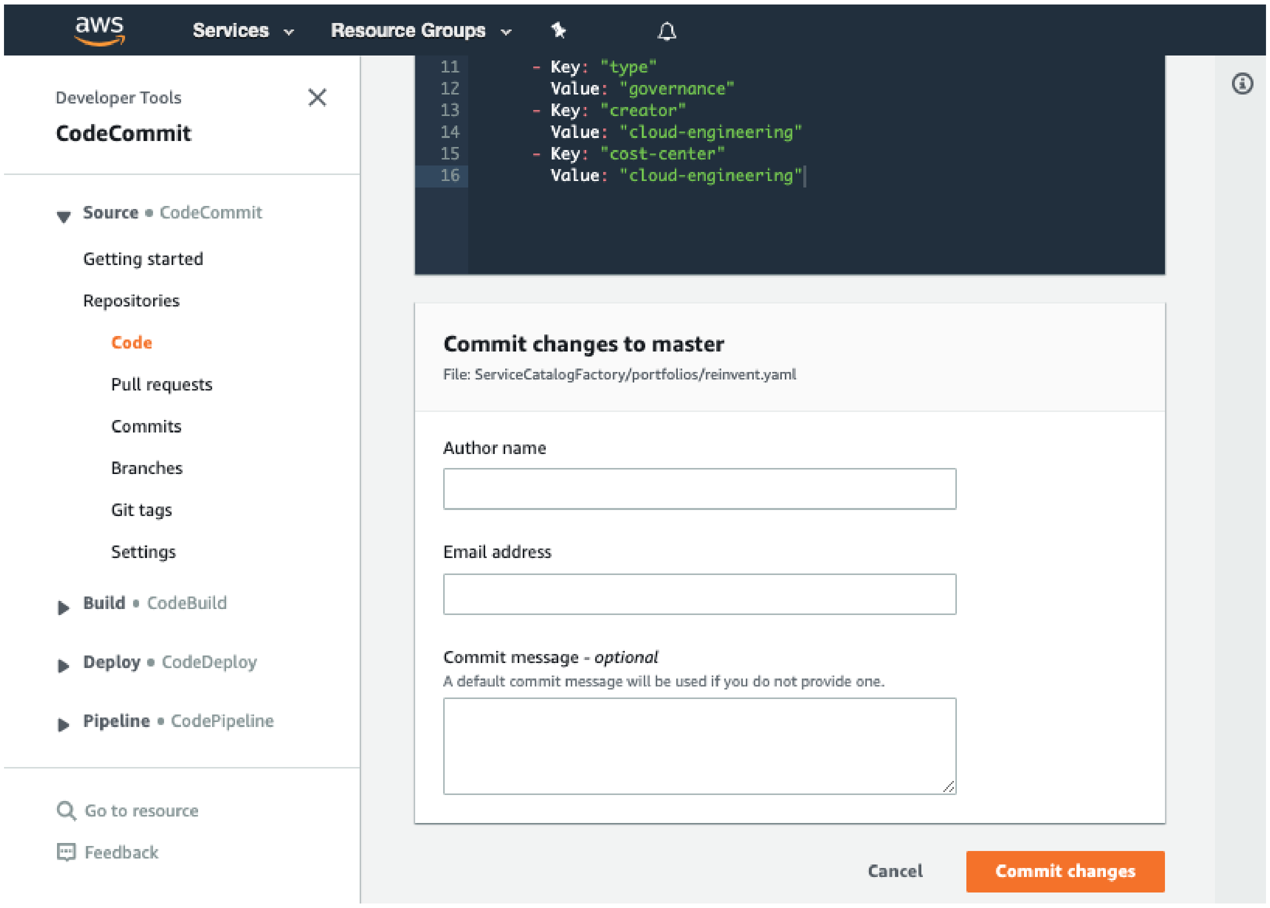
Committing the manifest file

- Set your *Author name*
- Set your *Email address*
- Set your *Commit message*

Tip

Using a good / unique commit message will help you understand what is going on later.

- Click the *Commit changes* button:



```
      - Key: "type"
        Value: "governance"
      - Key: "creator"
        Value: "cloud-engineering"
      - Key: "cost-center"
        Value: "cloud-engineering"
```

Commit changes to master

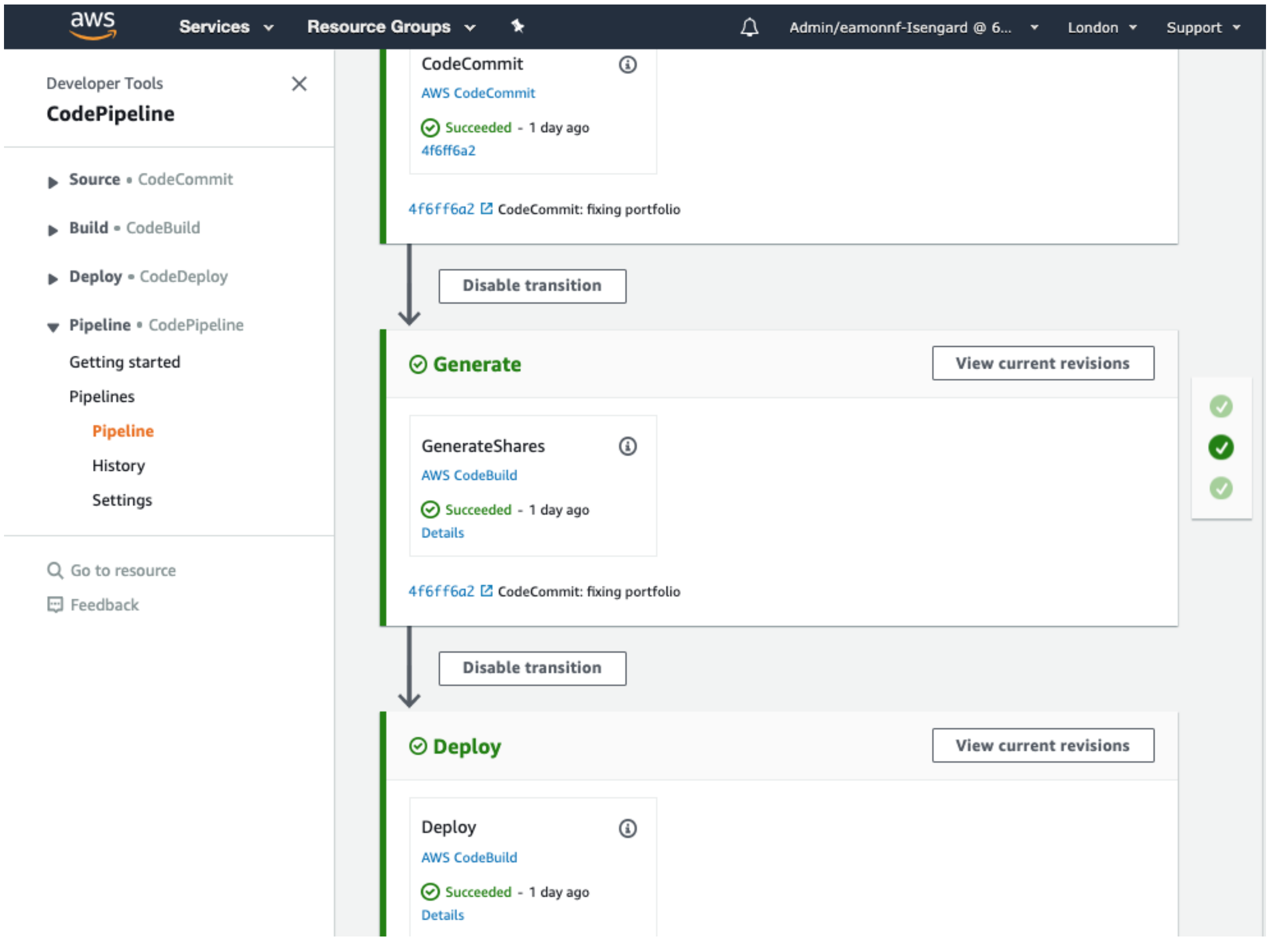
File: ServiceCatalogFactory/portfolios/reinvent.yaml

Author name	
Email address	
Commit message - *optional* A default commit message will be used if you do not provide one.	

Verifying the sharing

Once you have made your changes the ServiceCatalogPuppet Pipeline should have run. If you were quick may still be running. If it has not yet started feel free to the hit the *Release change* button.

Once it has completed it should show the *Source* and *Build* stages in green to indicate they have completed successfully:



CodeCommit
AWS CodeCommit
Succeeded - 1 day ago
4f6ff6a2

4f6ff6a2 CodeCommit: fixing portfolio

Generate

GenerateShares
AWS CodeBuild
Succeeded - 1 day ago
Details

4f6ff6a2 CodeCommit: fixing portfolio

Deploy

Deploy
AWS CodeBuild
Succeeded - 1 day ago
Details

Note

If this is failing please raise your hand for some assistance

Once you have verified the pipeline has run you can go to Service Catalog portfolios to view your shared product.

When you share a portfolio the framework will decide if it should share the portfolio. If the target account is the same as the factory account it will not share the portfolio as it is not needed.

Note

If you cannot see your product please raise your hand for some assistance