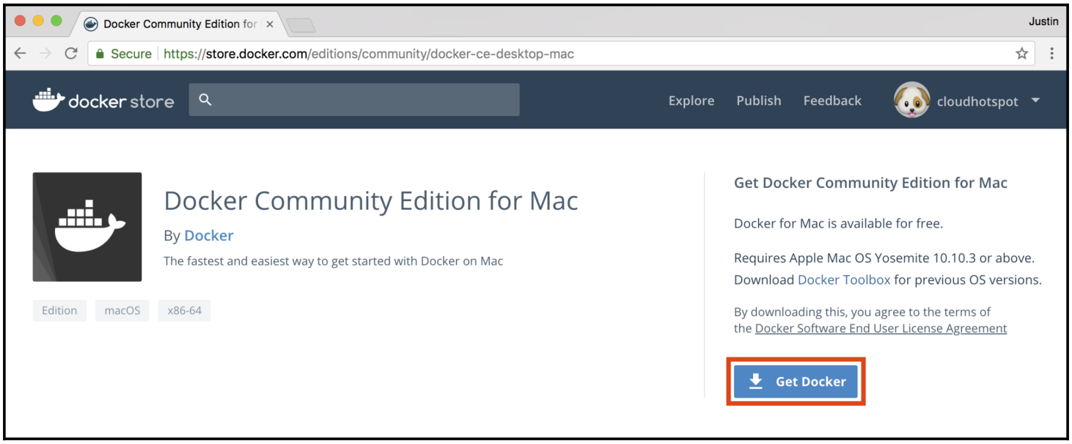
Chapter 1: Container and Docker Fundamentals


Docker Community Edition for
Justin
Secure
https://store.docker.com/editions/community/docker-ce-desktop-mac
docker store
Explore
Publish
Feedback
cloudhotspot

Docker Community Edition for Mac

By Docker

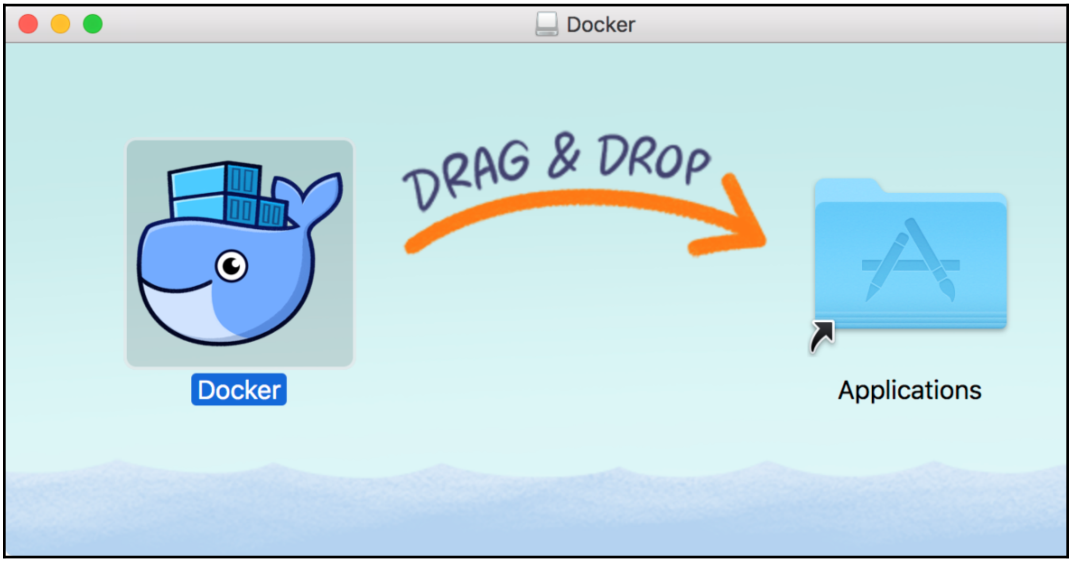
The fastest and easiest way to get started with Docker on Mac

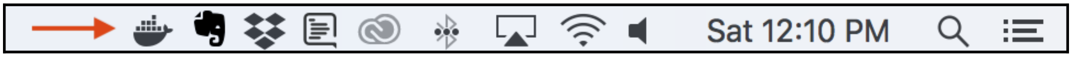
Get Docker Community Edition for Mac

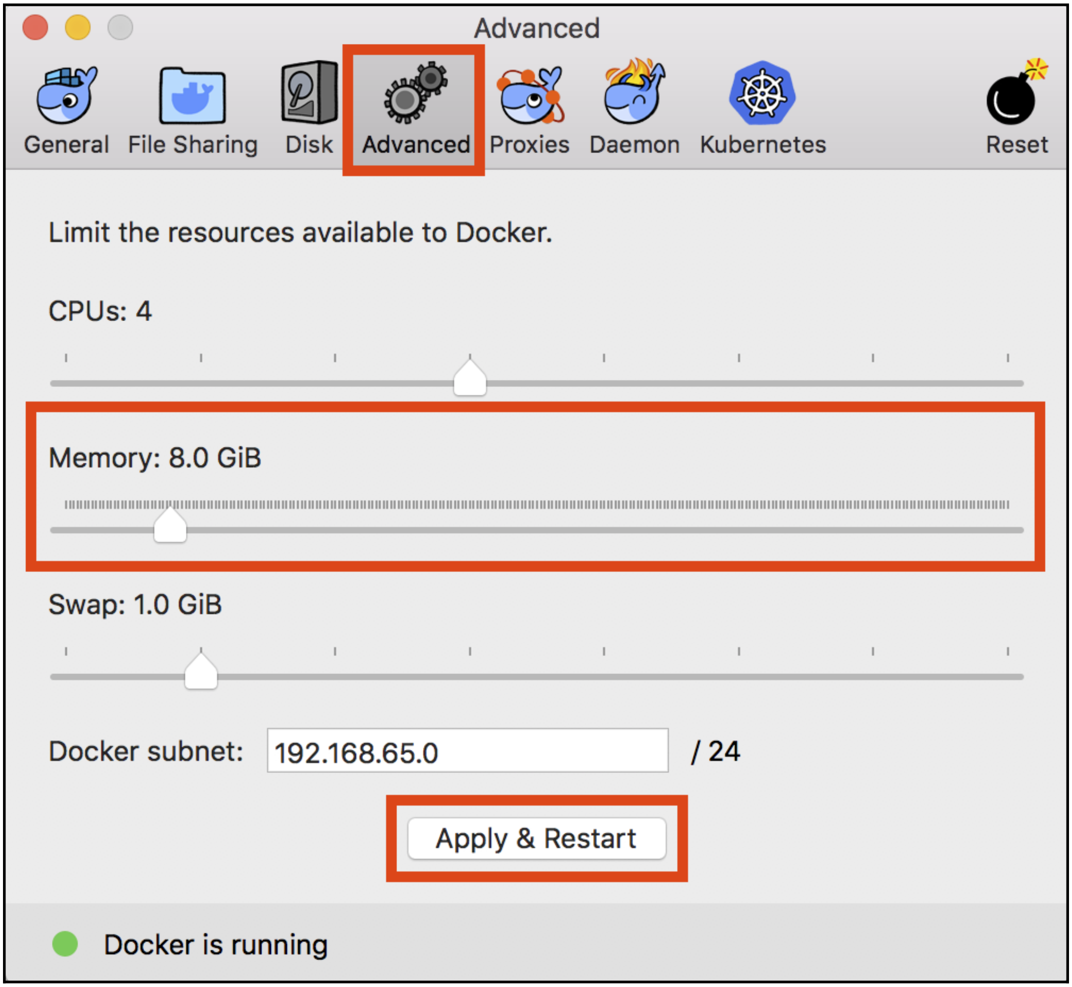
Docker for Mac is available for free.

Requires Apple Mac OS Yosemite 10.10.3 or above. Download Docker Toolbox for previous OS versions.

By downloading this, you agree to the terms of the Docker Software End User License Agreement







Limit the resources available to Docker.

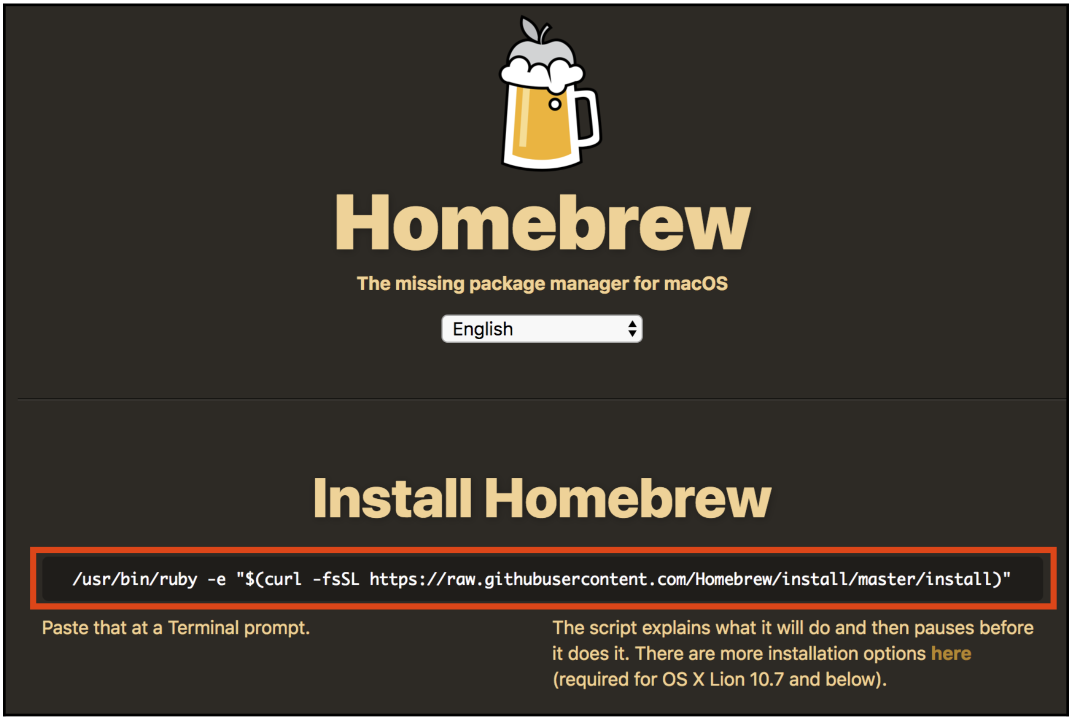
CPUs: 4

Memory: 8.0 GiB

Swap: 1.0 GiB

Docker subnet: 192.168.65.0 / 24

● Docker is running



Homebrew

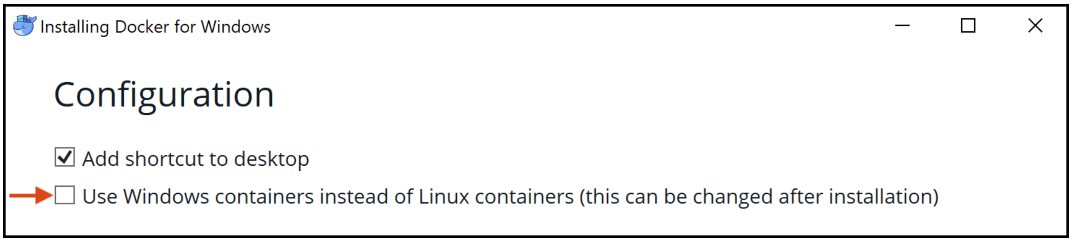
The missing package manager for macOS

Install Homebrew

```
/usr/bin/ruby -e "$(curl -fsSL https://raw.githubusercontent.com/Homebrew/install/master/install)"
```

Paste that at a Terminal prompt.

The script explains what it will do and then pauses before it does it. There are more installation options here (required for OS X Lion 10.7 and below).

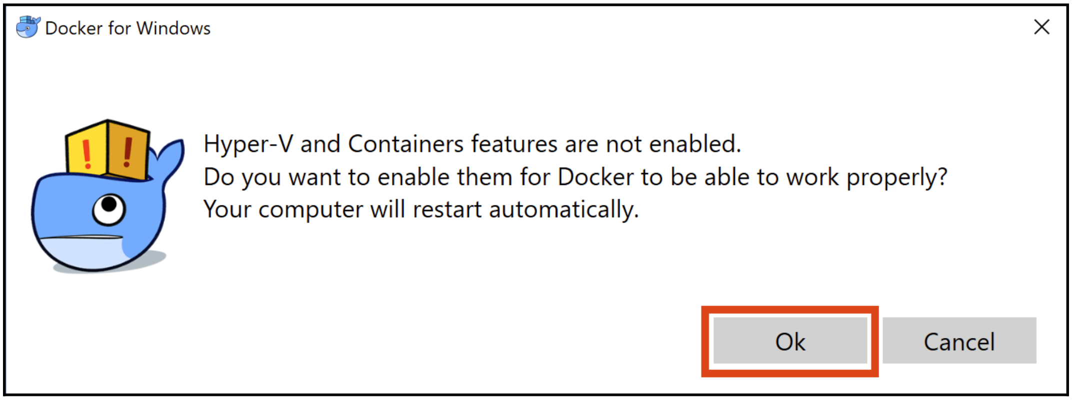


Installing Docker for Windows

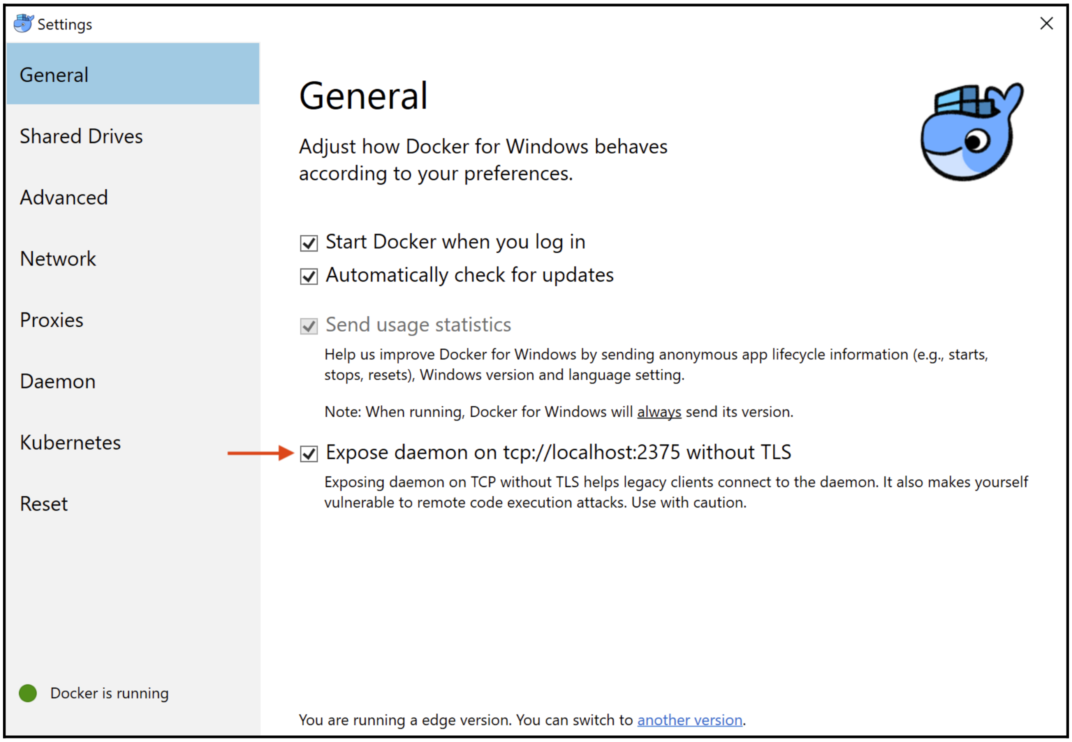
Configuration

☑ Add shortcut to desktop

□ Use Windows containers instead of Linux containers (this can be changed after installation)



Hyper-V and Containers features are not enabled.
Do you want to enable them for Docker to be able to work properly?
Your computer will restart automatically.



General

Adjust how Docker for Windows behaves according to your preferences.

☑ Start Docker when you log in

☑ Automatically check for updates

☑ Send usage statistics

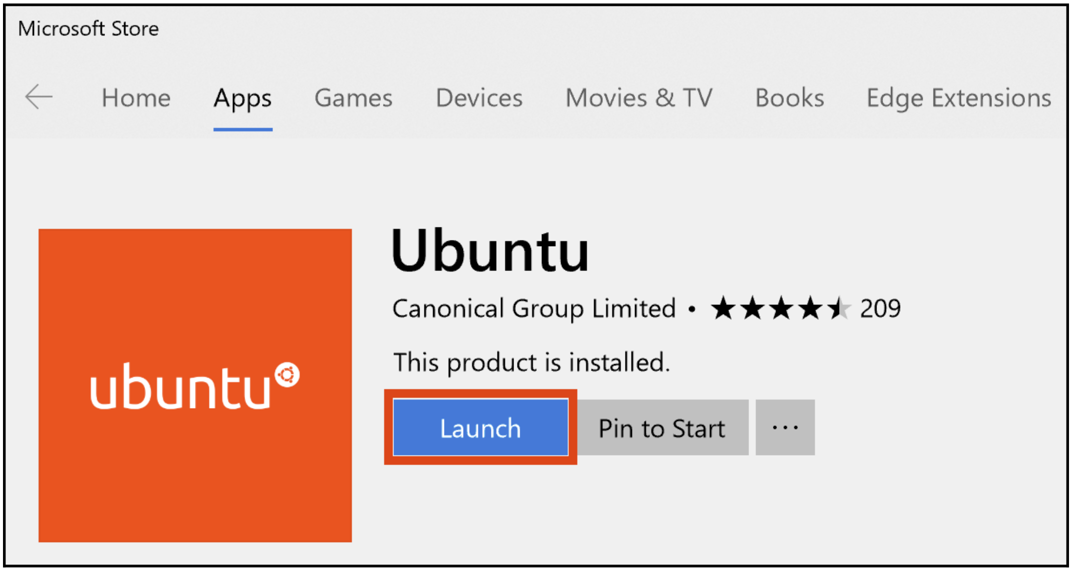
Help us improve Docker for Windows by sending anonymous app lifecycle information (e.g., starts, stops, resets), Windows version and language setting.

Note: When running, Docker for Windows will always send its version.

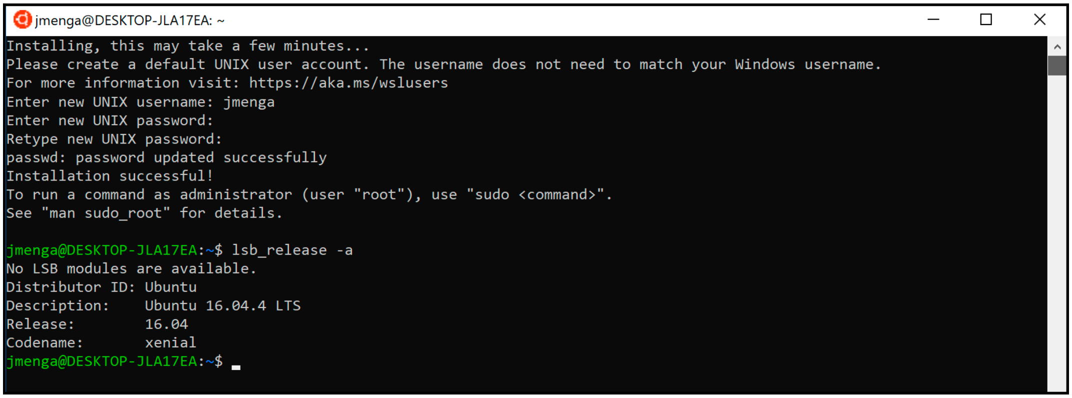
☑ Expose daemon on tcp://localhost:2375 without TLS

Exposing daemon on TCP without TLS helps legacy clients connect to the daemon. It also makes yourself vulnerable to remote code execution attacks. Use with caution.

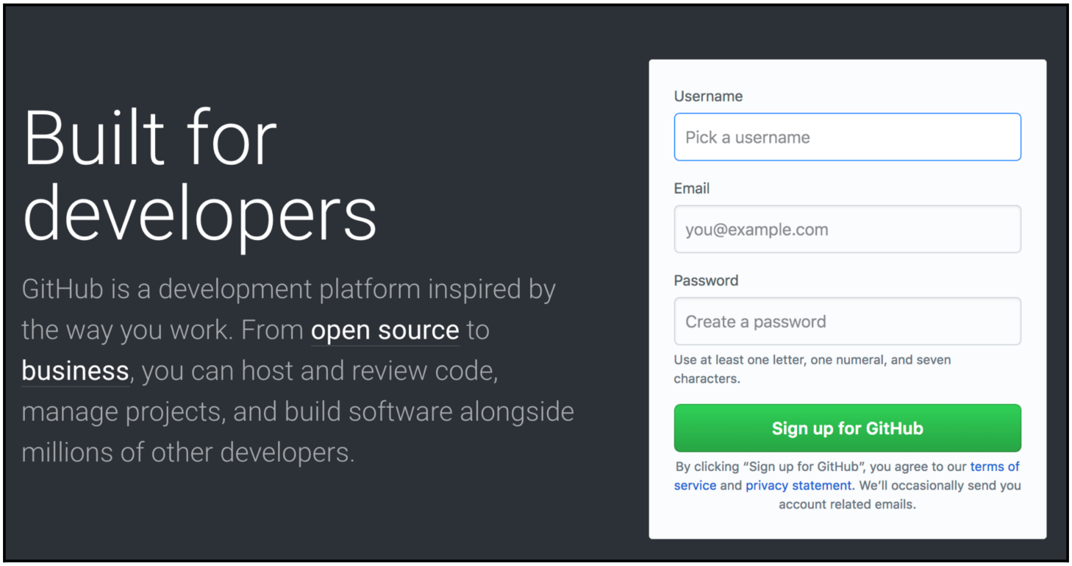
You are running a edge version. You can switch to another version.



This product is installed.



```
Installing, this may take a few minutes...
Please create a default UNIX user account. The username does not need to match your Windows username.
For more information visit: https://aka.ms/wslusers
Enter new UNIX username: jmenga
Enter new UNIX password:
Retype new UNIX password:
passwd: password updated successfully
Installation successful!
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

jmenga@DESKTOP-JLA17EA:~$ lsb_release -a
No LSB modules are available.
Distributor ID: Ubuntu
Description:    Ubuntu 16.04.4 LTS
Release:        16.04
Codename:       xenial
jmenga@DESKTOP-JLA17EA:~$ _
```



Built for developers

GitHub is a development platform inspired by the way you work. From open source to business, you can host and review code, manage projects, and build software alongside millions of other developers.

Username

Pick a username

Email

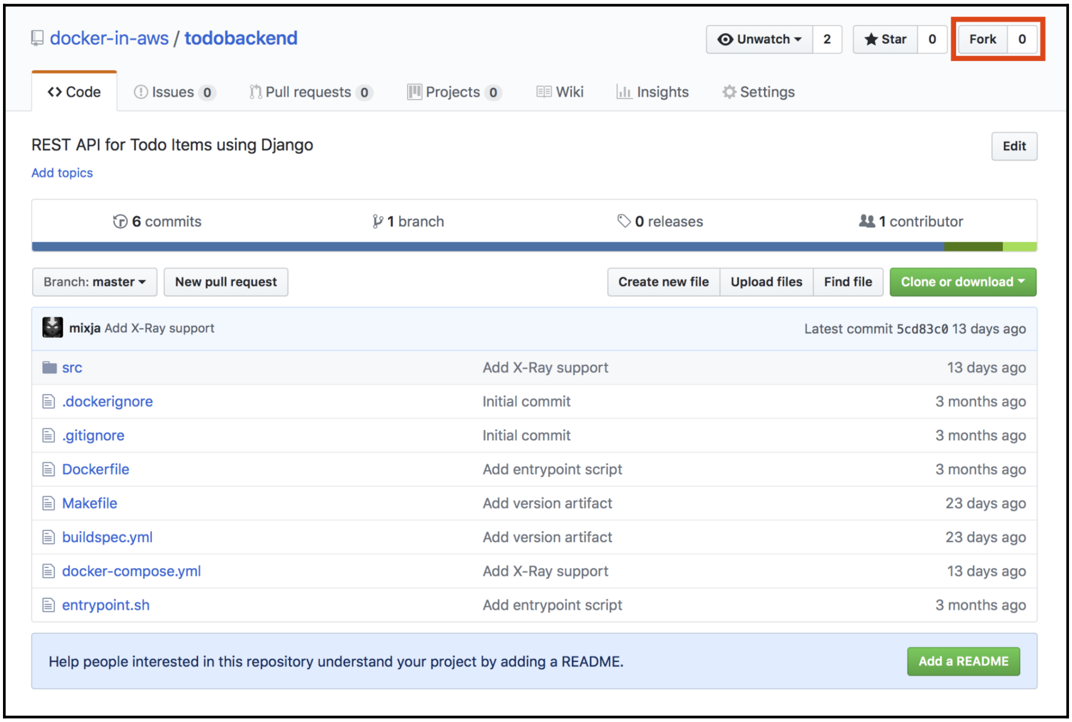
you@example.com

Password

Create a password

Use at least one letter, one numeral, and seven characters.

By clicking “Sign up for GitHub”, you agree to our terms of service and privacy statement. We’ll occasionally send you account related emails.



docker-in-aws / todobackend

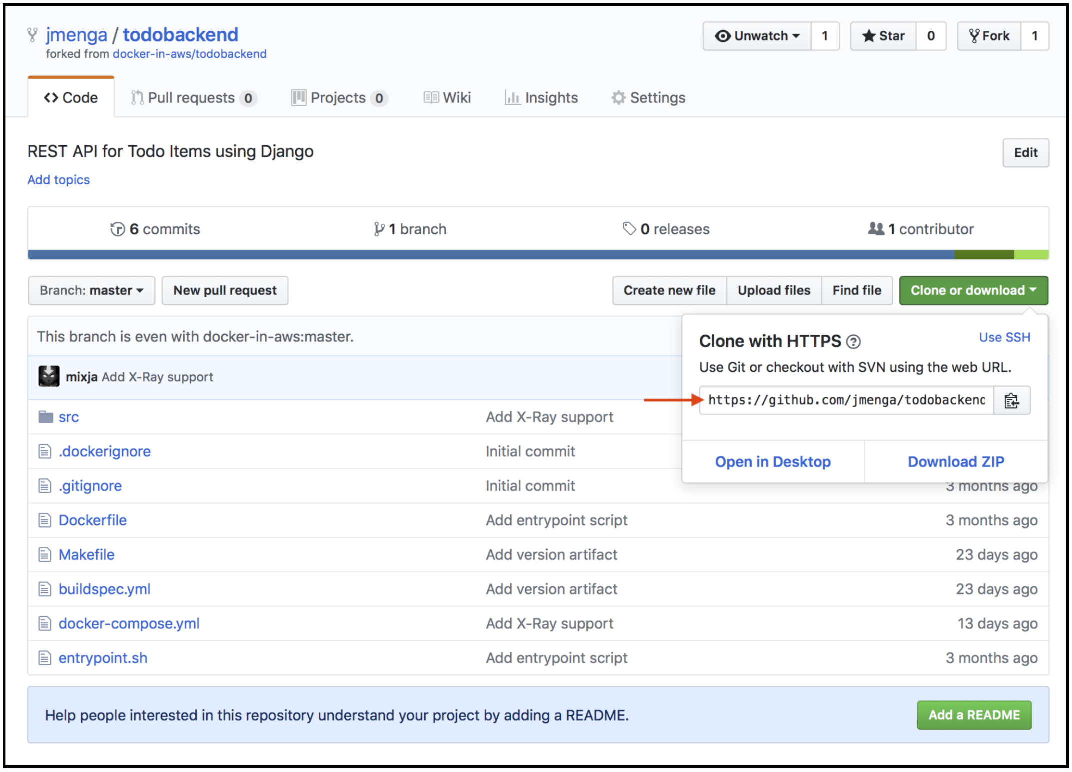
REST API for Todo Items using Django

6 commits · 1 branch · 0 releases · 1 contributor

mixja Add X-Ray support — Latest commit 5cd83c0 13 days ago

src	Add X-Ray support	13 days ago
.dockerignore	Initial commit	3 months ago
.gitignore	Initial commit	3 months ago
Dockerfile	Add entrypoint script	3 months ago
Makefile	Add version artifact	23 days ago
buildspec.yml	Add version artifact	23 days ago
docker-compose.yml	Add X-Ray support	13 days ago
entrypoint.sh	Add entrypoint script	3 months ago

Help people interested in this repository understand your project by adding a README.



jmenga / todobackend

forked from docker-in-aws/todobackend

REST API for Todo Items using Django

This branch is even with docker-in-aws:master.

mixja Add X-Ray support

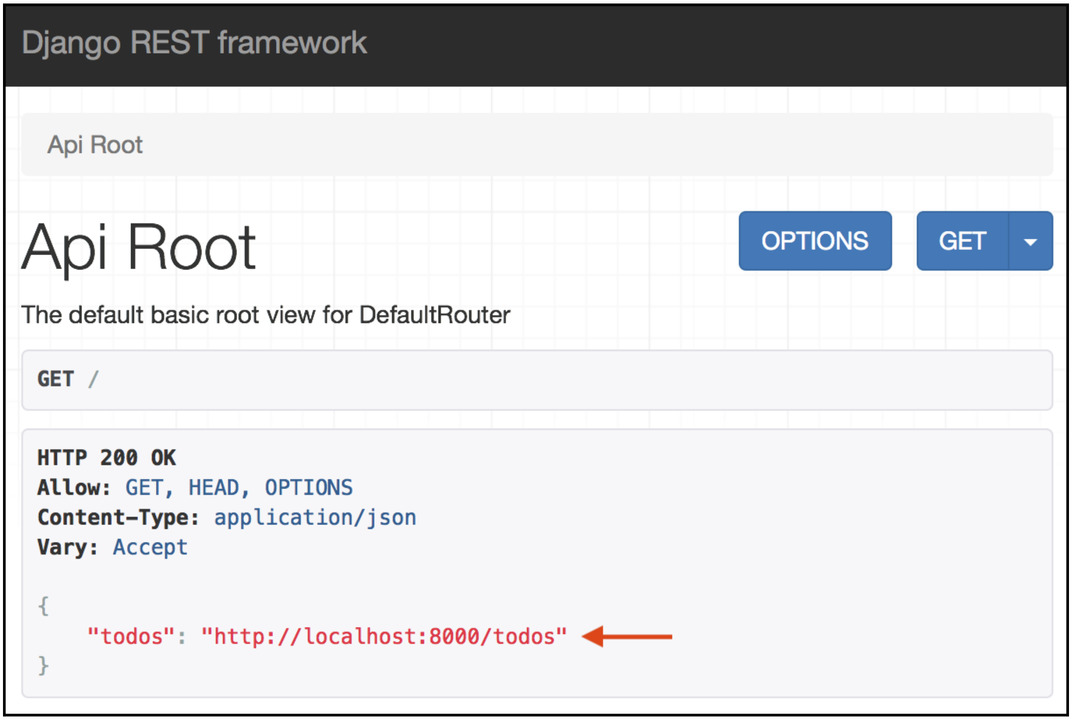
src	Add X-Ray support	
.dockerignore	Initial commit	
.gitignore	Initial commit	3 months ago
Dockerfile	Add entrypoint script	3 months ago
Makefile	Add version artifact	23 days ago
buildspec.yml	Add version artifact	23 days ago
docker-compose.yml	Add X-Ray support	13 days ago
entrypoint.sh	Add entrypoint script	3 months ago

Clone with HTTPS

Use Git or checkout with SVN using the web URL.

```
https://github.com/jmenga/todobackenc
```

Help people interested in this repository understand your project by adding a README.

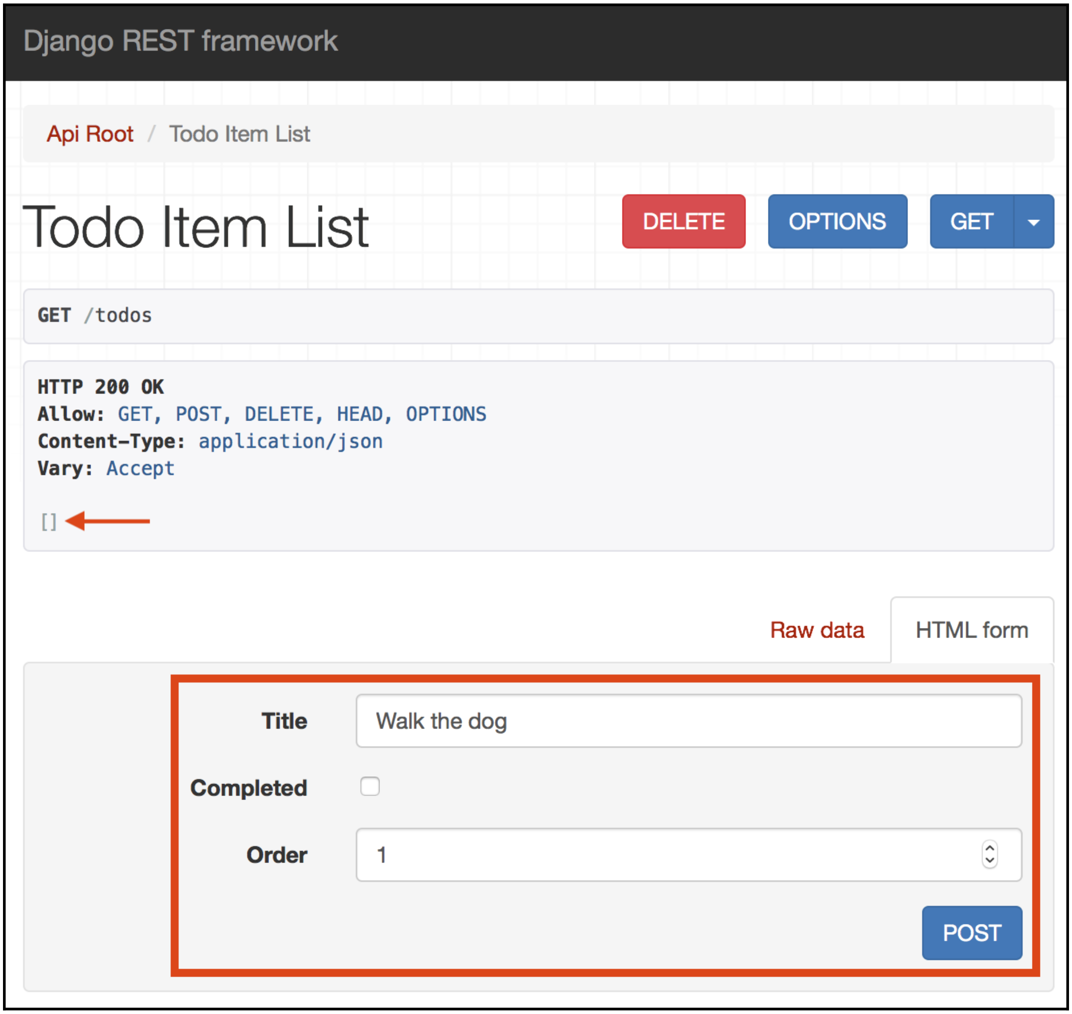


Api Root

The default basic root view for DefaultRouter

```
GET /
```

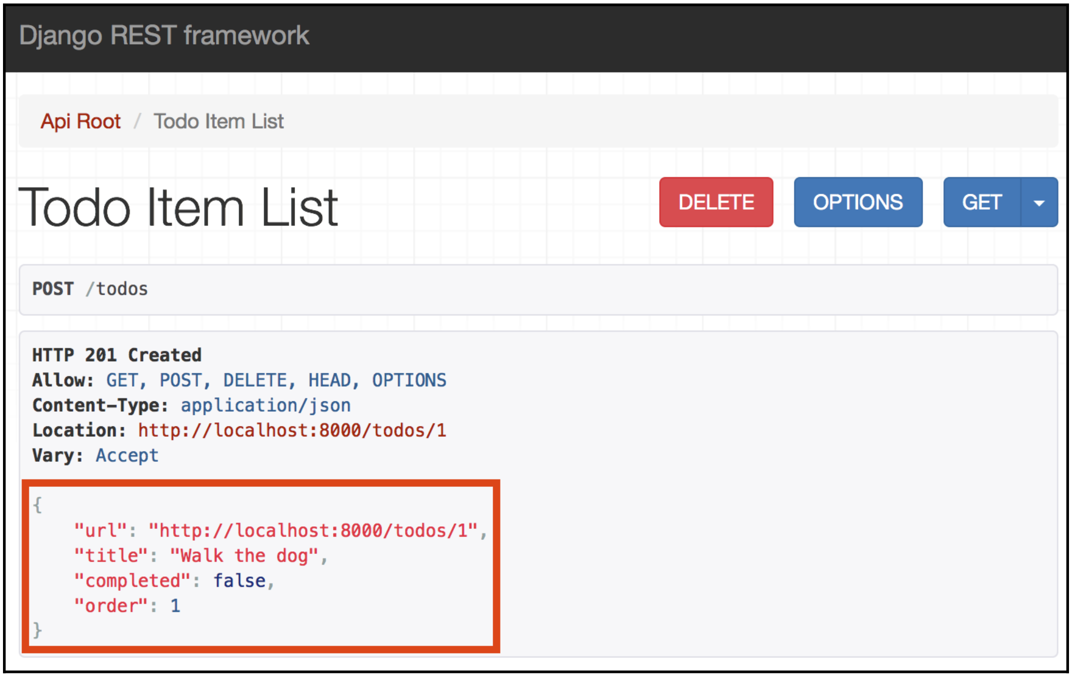
```
HTTP 200 OK
Allow: GET, HEAD, OPTIONS
Content-Type: application/json
Vary: Accept

{
    "todos": "http://localhost:8000/todos"
}
```



```
GET /todos
```

```
HTTP 200 OK
Allow: GET, POST, DELETE, HEAD, OPTIONS
Content-Type: application/json
Vary: Accept

[]
```

Title	Walk the dog
Completed	□
Order	1

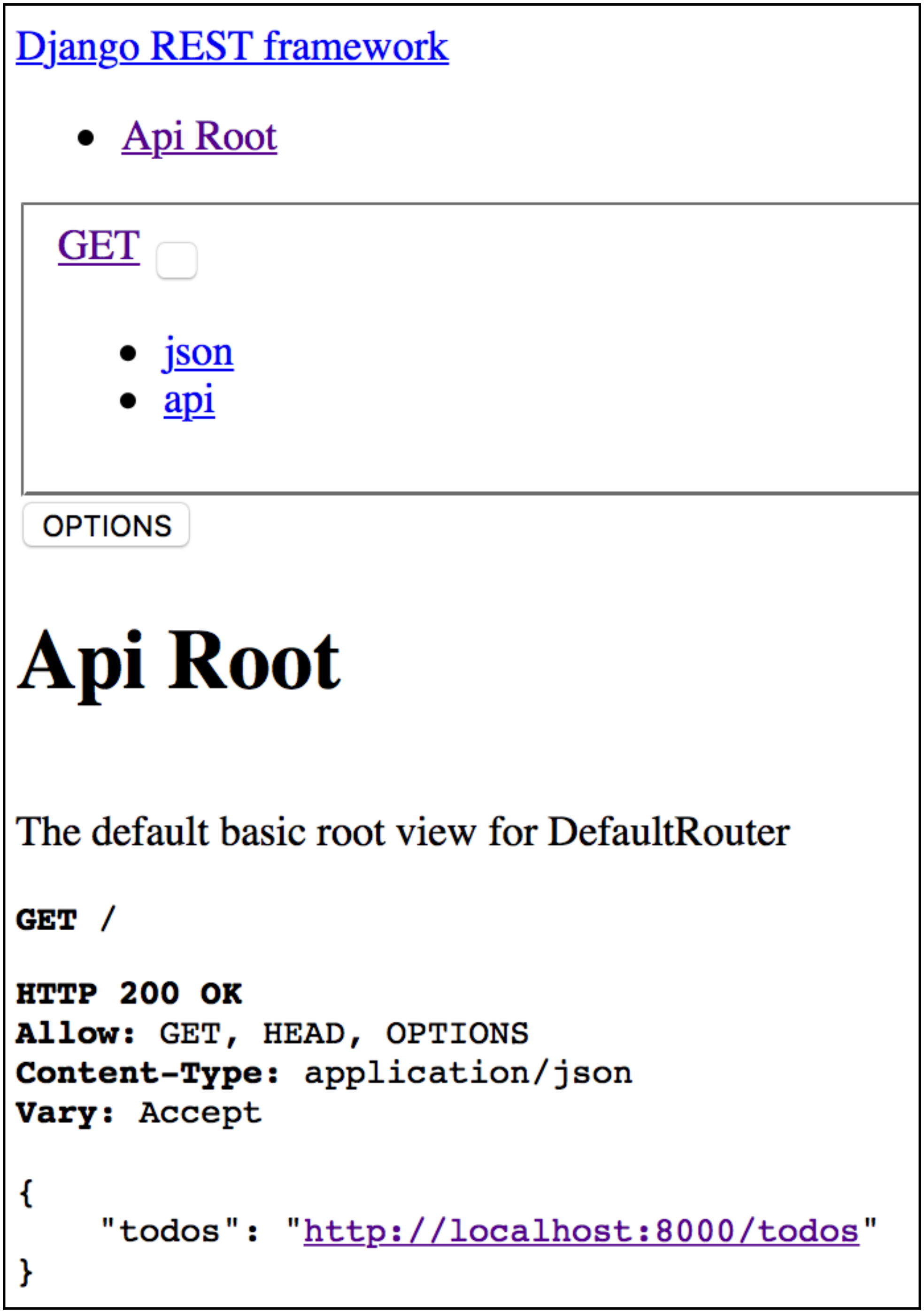


Todo Item List

```
POST /todos
```

```
HTTP 201 Created
Allow: GET, POST, DELETE, HEAD, OPTIONS
Content-Type: application/json
Location: http://localhost:8000/todos/1
Vary: Accept

{
    "url": "http://localhost:8000/todos/1",
    "title": "Walk the dog",
    "completed": false,
    "order": 1
}
```

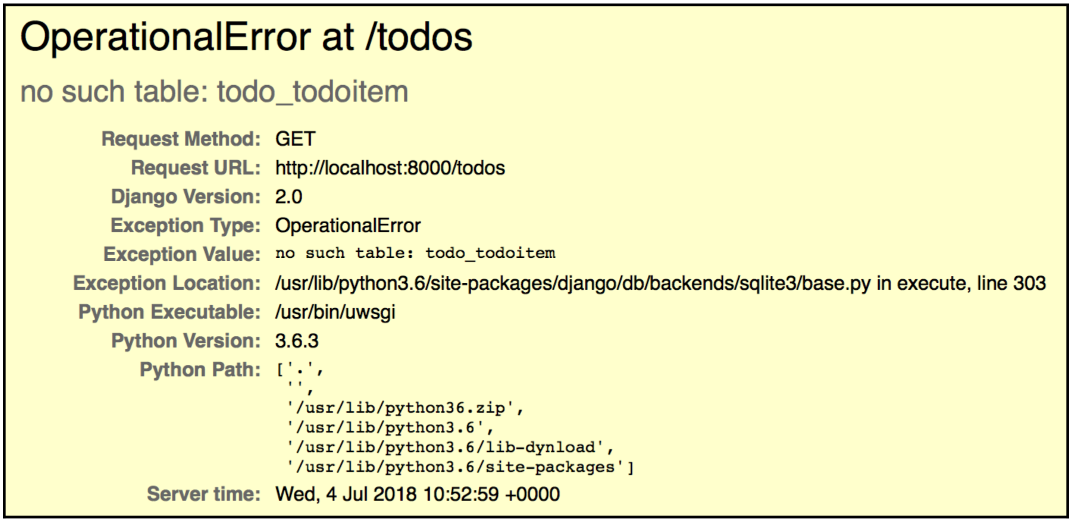
Chapter 2: Building Applications Using Docker



Api Root

The default basic root view for DefaultRouter

```
GET /

HTTP 200 OK
Allow: GET, HEAD, OPTIONS
Content-Type: application/json
Vary: Accept

{
    "todos": "http://localhost:8000/todos"
}
```



OperationalError at /todos

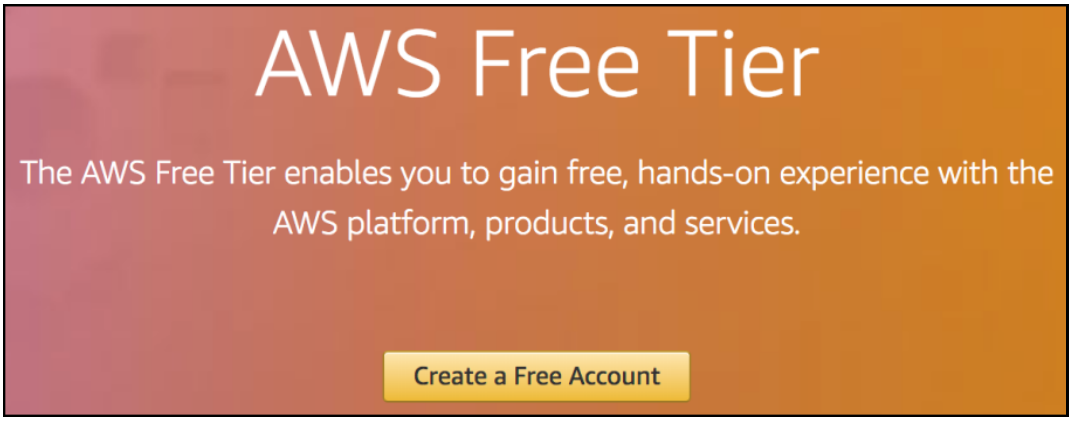
no such table: todo_todoitem

Request Method:	GET
Request URL:	http://localhost:8000/todos
Django Version:	2.0
Exception Type:	OperationalError
Exception Value:	`no such table: todo_todoitem`
Exception Location:	/usr/lib/python3.6/site-packages/django/db/backends/sqlite3/base.py in execute, line 303
Python Executable:	/usr/bin/uwsgi
Python Version:	3.6.3

Python Path:	`['.',`
	`'',`
	`'/usr/lib/python36.zip',`
	`'/usr/lib/python3.6',`
	`'/usr/lib/python3.6/lib-dynload',`
	`'/usr/lib/python3.6/site-packages']`

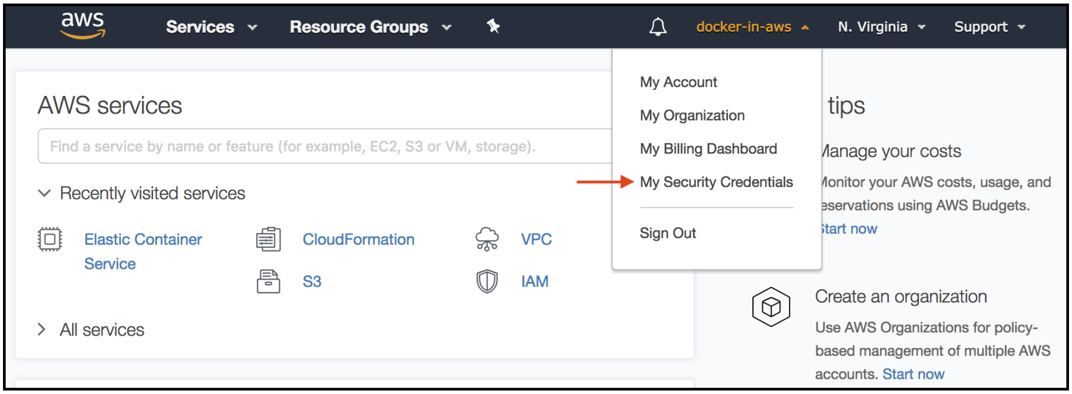
Server time:	Wed, 4 Jul 2018 10:52:59 +0000

Chapter 3: Getting Started with AWS



AWS Free Tier

The AWS Free Tier enables you to gain free, hands-on experience with the AWS platform, products, and services.

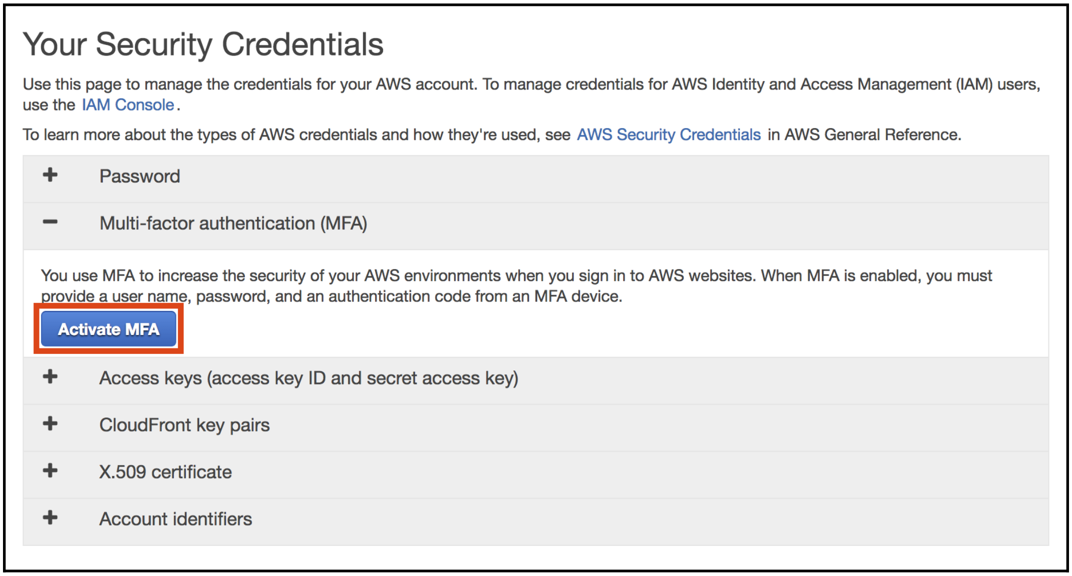


Manage your costs

Monitor your AWS costs, usage, and reservations using AWS Budgets. Start now

Create an organization

Use AWS Organizations for policy-based management of multiple AWS accounts. Start now

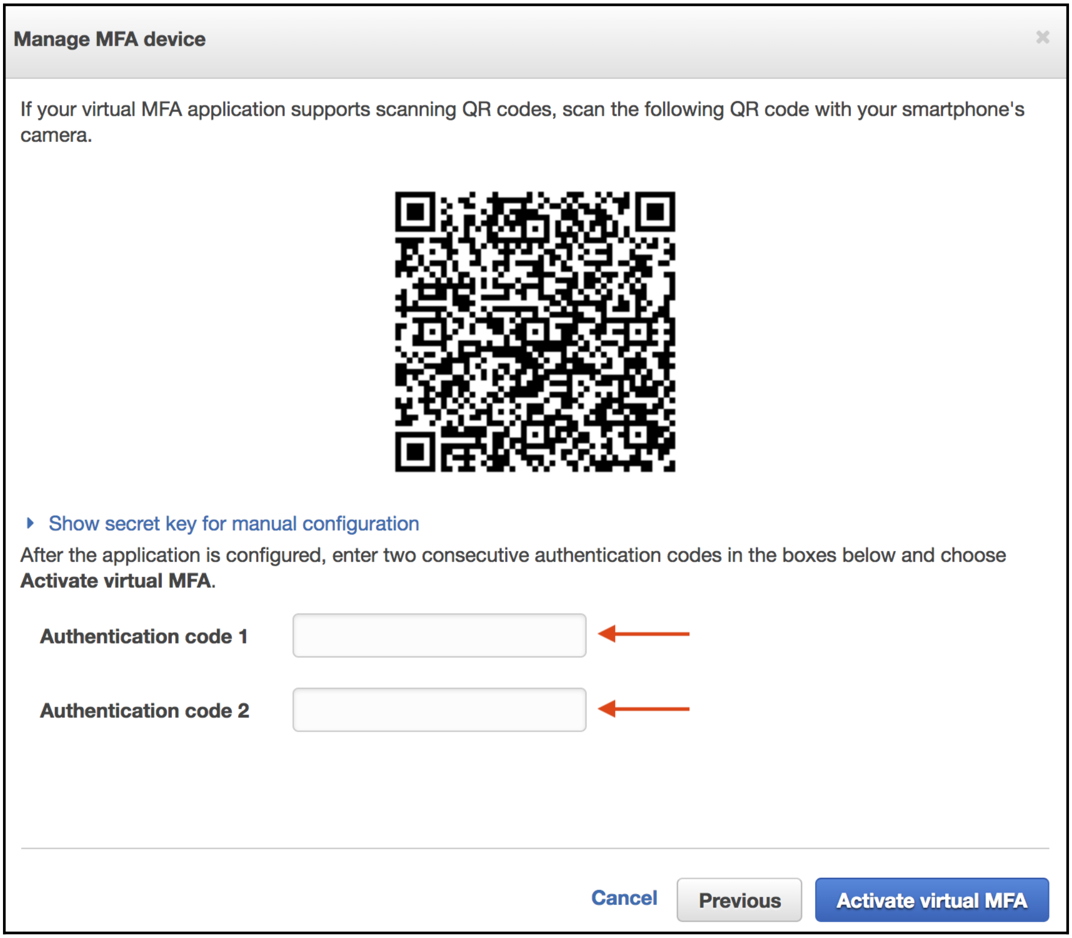


Your Security Credentials

Use this page to manage the credentials for your AWS account. To manage credentials for AWS Identity and Access Management (IAM) users, use the IAM Console.

To learn more about the types of AWS credentials and how they're used, see AWS Security Credentials in AWS General Reference.

You use MFA to increase the security of your AWS environments when you sign in to AWS websites. When MFA is enabled, you must provide a user name, password, and an authentication code from an MFA device.



Manage MFA device

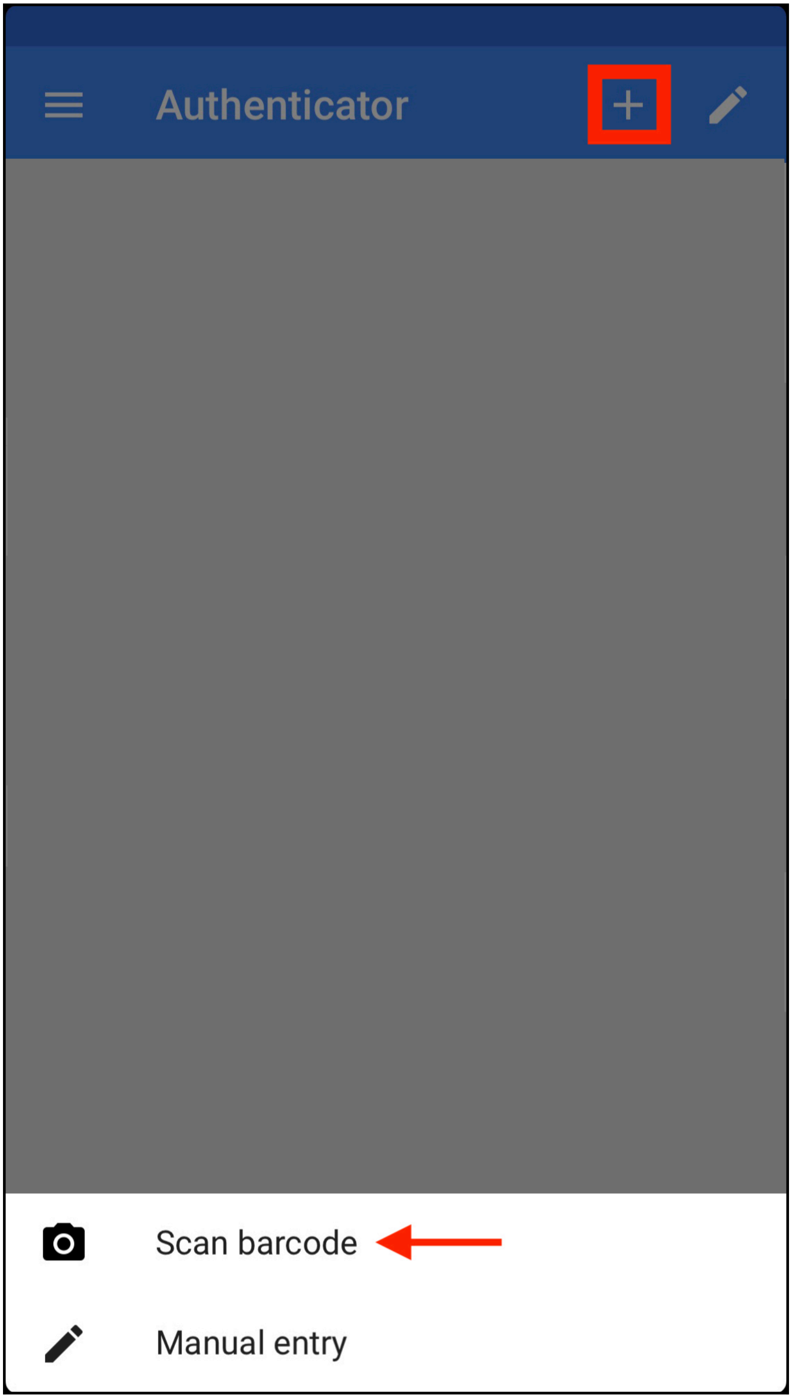
If your virtual MFA application supports scanning QR codes, scan the following QR code with your smartphone's camera.

Show secret key for manual configuration

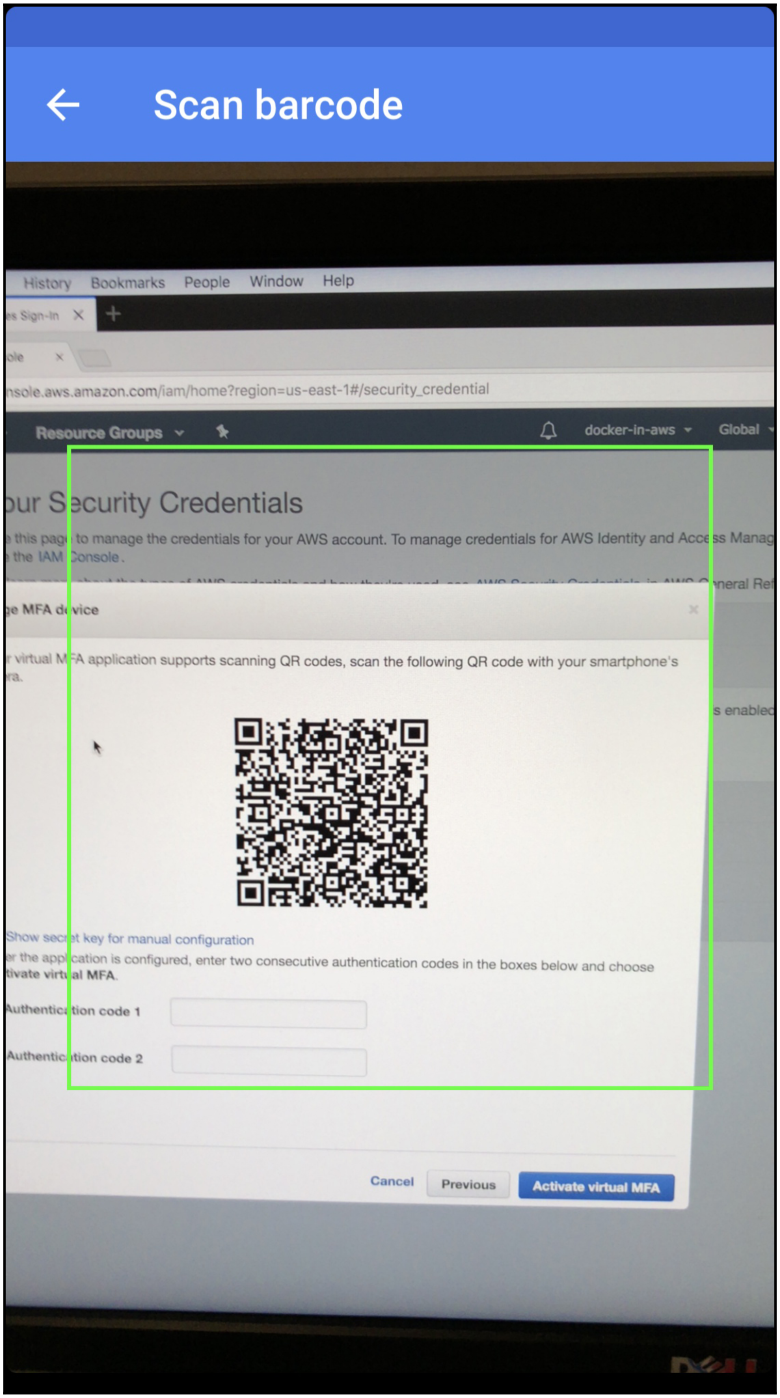
After the application is configured, enter two consecutive authentication codes in the boxes below and choose **Activate virtual MFA**.

Authentication code 1

Authentication code 2



Authenticator
Scan barcode
Manual entry



Scan barcode
History Bookmarks People Window Help
es Sign-In
ole
nsole.aws.amazon.com/iam/home?region=us-east-1#/security_credential
Resource Groups
docker-in-aws
Global

our Security Credentials

e this page to manage the credentials for your AWS account. To manage credentials for AWS Identity and Access Manag
e the IAM Console.

ge MFA device

r virtual MFA application supports scanning QR codes, scan the following QR code with your smartphone's
ra.

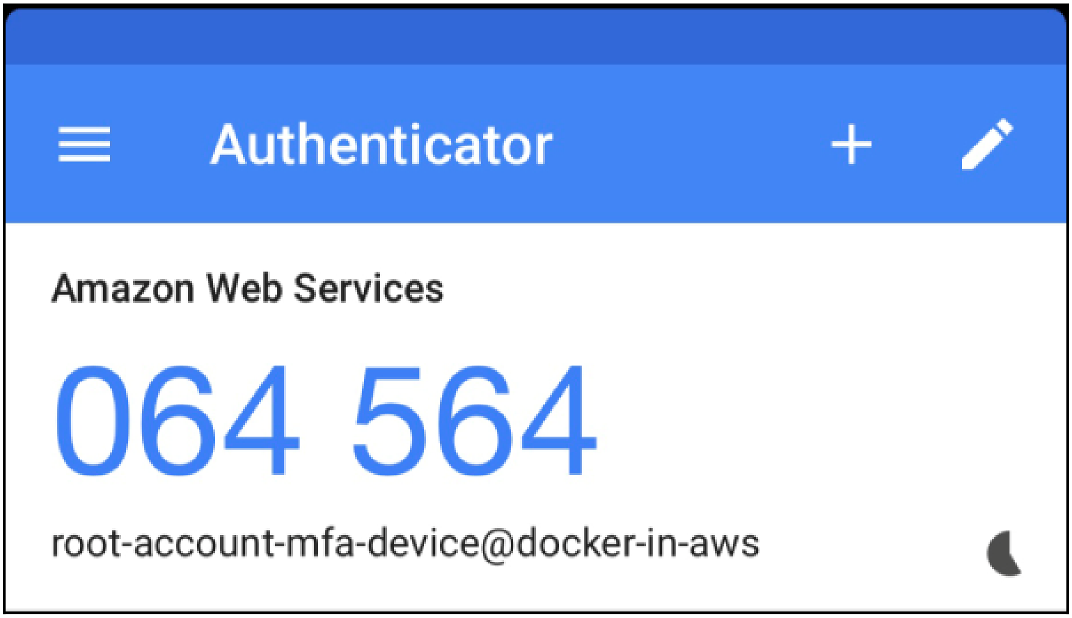
s enabled

Show secret key for manual configuration

er the application is configured, enter two consecutive authentication codes in the boxes below and choose
tivate virtual MFA.

Authentication code 1

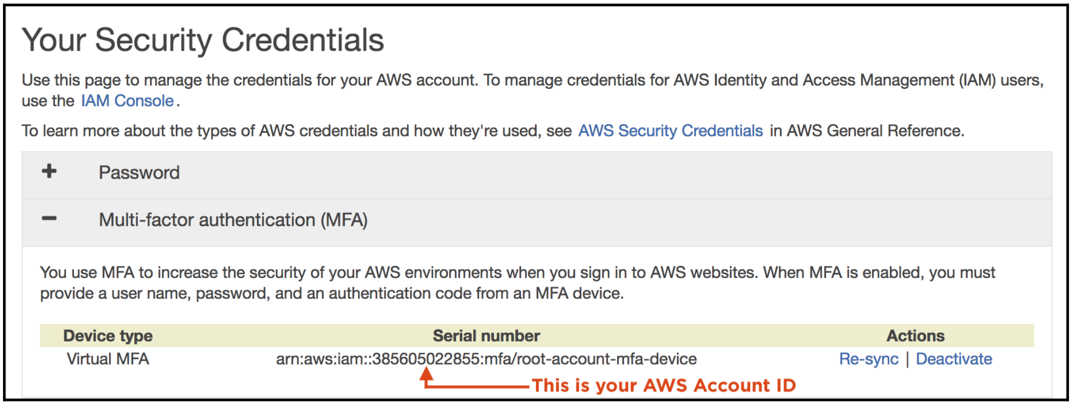
Authentication code 2



Amazon Web Services

064 564

root-account-mfa-device@docker-in-aws



Your Security Credentials

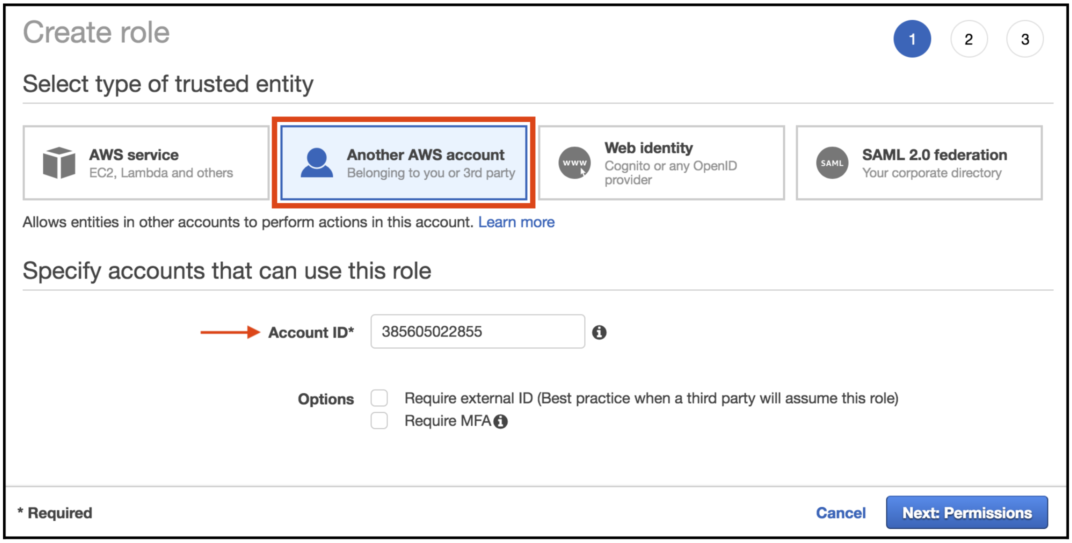
Use this page to manage the credentials for your AWS account. To manage credentials for AWS Identity and Access Management (IAM) users, use the IAM Console.

To learn more about the types of AWS credentials and how they're used, see AWS Security Credentials in AWS General Reference.

You use MFA to increase the security of your AWS environments when you sign in to AWS websites. When MFA is enabled, you must provide a user name, password, and an authentication code from an MFA device.

Device type	Serial number	Actions
Virtual MFA	arn:aws:iam::385605022855:mfa/root-account-mfa-device	Re-sync | Deactivate

This is your AWS Account ID



Create role

Select type of trusted entity

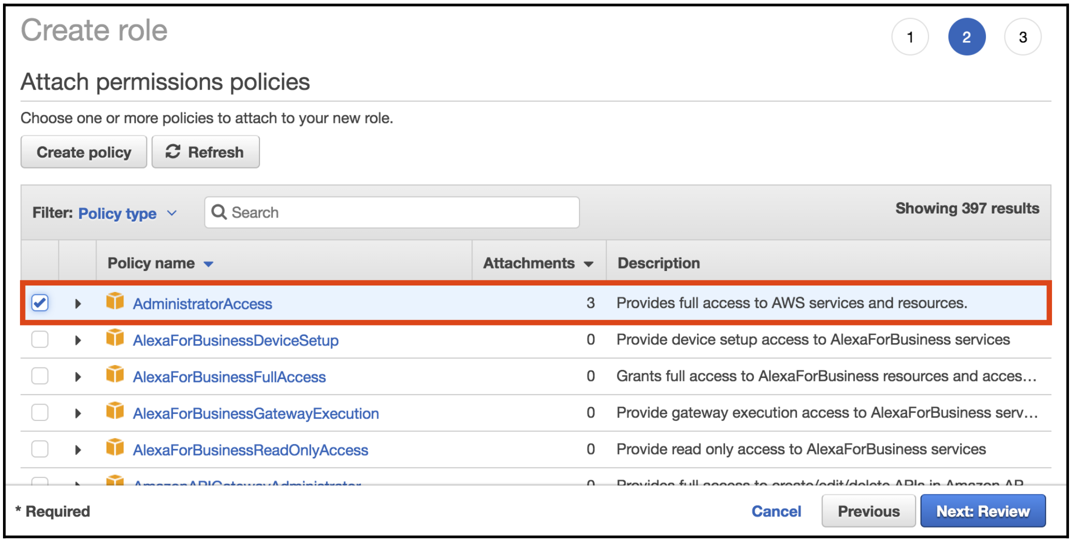
Allows entities in other accounts to perform actions in this account. Learn more

Specify accounts that can use this role

Account ID* 385605022855

Options
□ Require external ID (Best practice when a third party will assume this role)
□ Require MFA

* Required



Create role

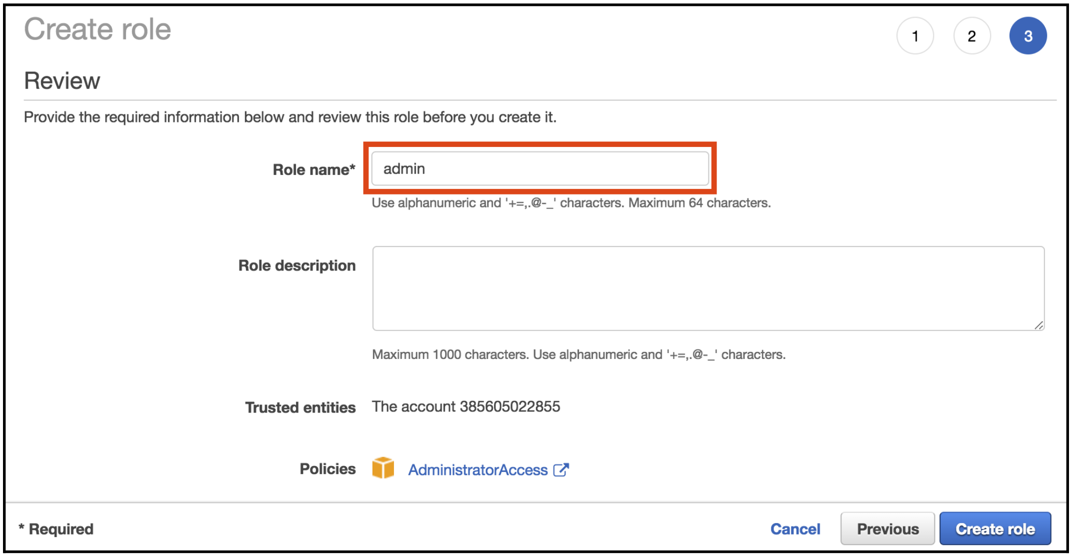
Attach permissions policies

Choose one or more policies to attach to your new role.

Showing 397 results

		Policy name	Attachments	Description
☑	▸	AdministratorAccess	3	Provides full access to AWS services and resources.
□	▸	AlexaForBusinessDeviceSetup	0	Provide device setup access to AlexaForBusiness services
□	▸	AlexaForBusinessFullAccess	0	Grants full access to AlexaForBusiness resources and acces…
□	▸	AlexaForBusinessGatewayExecution	0	Provide gateway execution access to AlexaForBusiness serv…
□	▸	AlexaForBusinessReadOnlyAccess	0	Provide read only access to AlexaForBusiness services
□	▸	AmazonAPIGatewayAdministrator	0	Provides full access to create/edit/delete APIs in Amazon AP…

* Required



Create role

Review

Provide the required information below and review this role before you create it.

Role name* admin

Use alphanumeric and '+=,.@-_' characters. Maximum 64 characters.

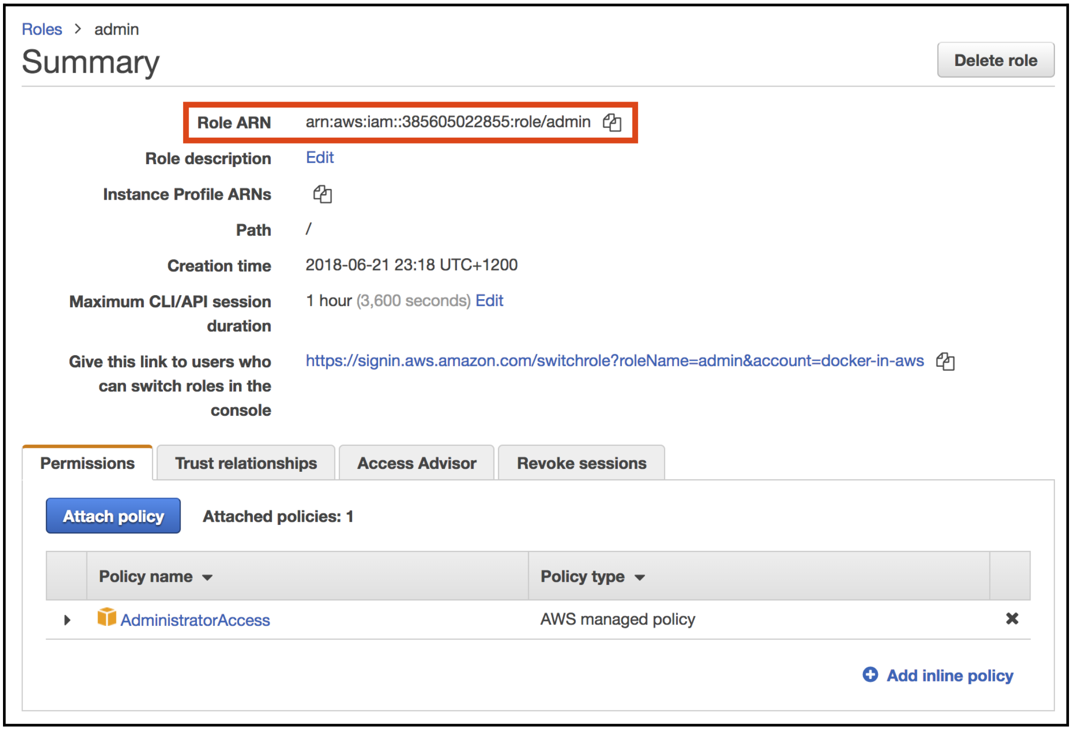
Role description

Maximum 1000 characters. Use alphanumeric and '+=,.@-_' characters.

Trusted entities The account 385605022855

Policies AdministratorAccess

* Required



Roles > admin

Summary

Role ARN arn:aws:iam::385605022855:role/admin

Role description Edit

Instance Profile ARNs

Path /

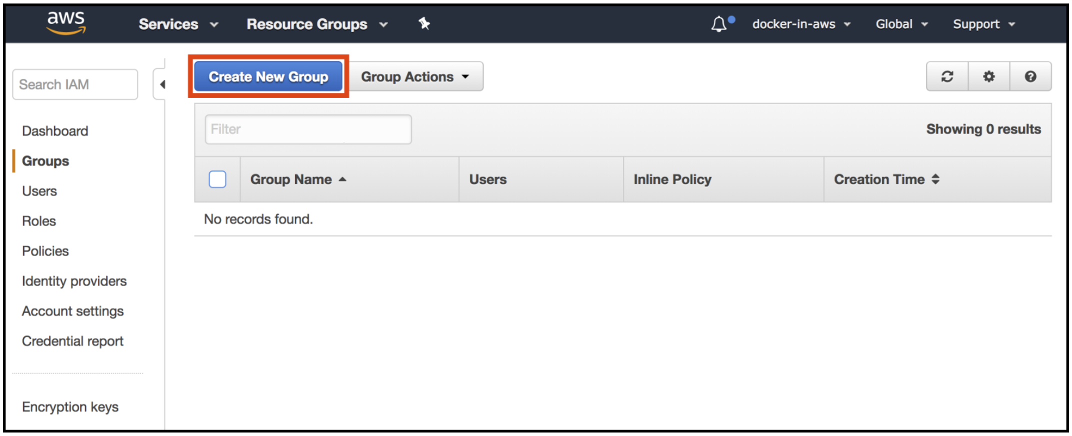
Creation time 2018-06-21 23:18 UTC+1200

Maximum CLI/API session duration 1 hour (3,600 seconds) Edit

Give this link to users who can switch roles in the console https://signin.aws.amazon.com/switchrole?roleName=admin&account=docker-in-aws

Attached policies: 1

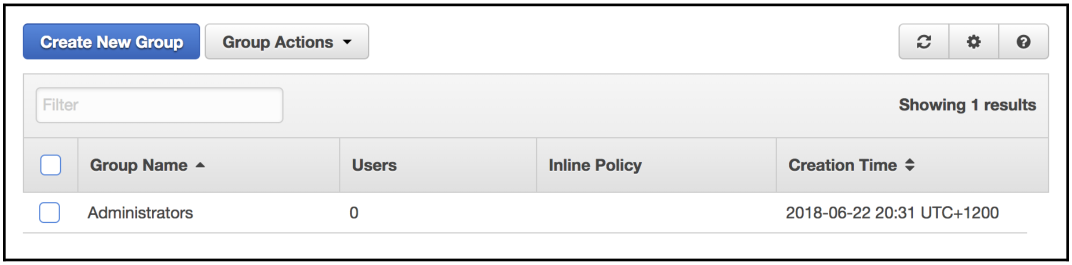
Policy name	Policy type	
AdministratorAccess	AWS managed policy	✖



Showing 0 results

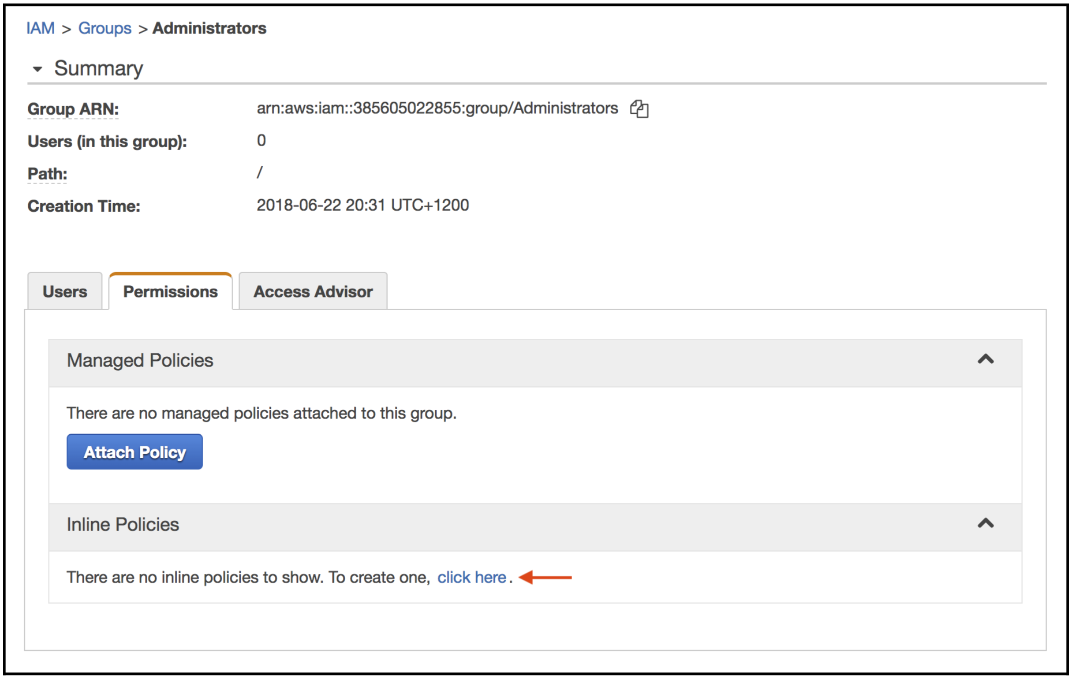
□	Group Name ▲	Users	Inline Policy	Creation Time ⬍

No records found.



Showing 1 results

□	Group Name ▲	Users	Inline Policy	Creation Time ⬍
□	Administrators	0		2018-06-22 20:31 UTC+1200



IAM > Groups > Administrators

Summary

Group ARN: arn:aws:iam::385605022855:group/Administrators

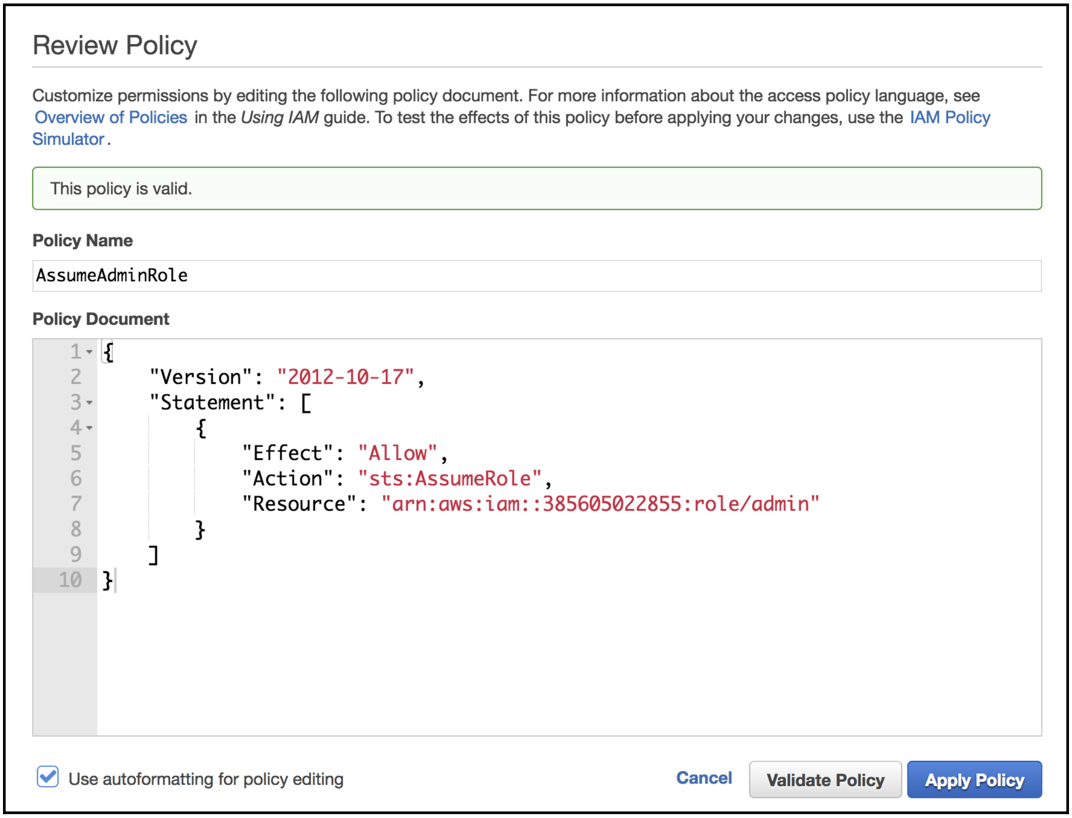
Users (in this group): 0

Path: /

Creation Time: 2018-06-22 20:31 UTC+1200

There are no managed policies attached to this group.

There are no inline policies to show. To create one, click here.



Review Policy

Customize permissions by editing the following policy document. For more information about the access policy language, see Overview of Policies in the *Using IAM* guide. To test the effects of this policy before applying your changes, use the IAM Policy Simulator.

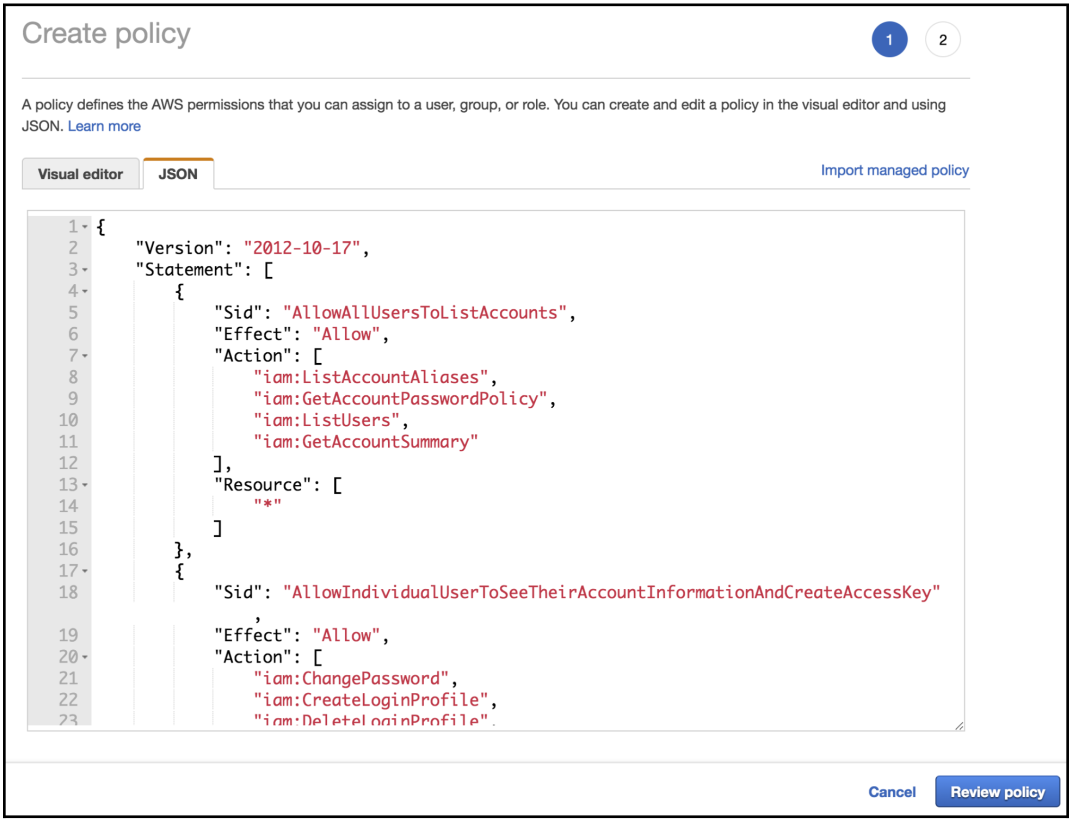
This policy is valid.

Policy Name

AssumeAdminRole

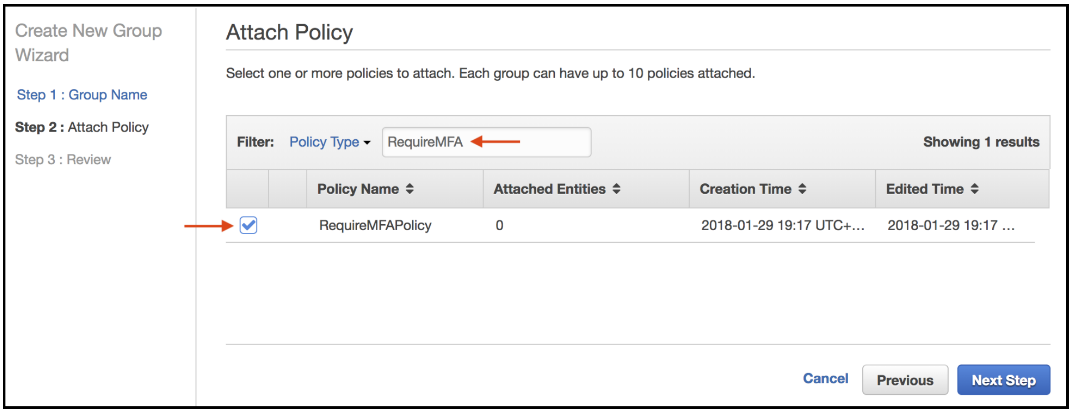
Policy Document

```
{
    "Version": "2012-10-17",
    "Statement": [
        {
            "Effect": "Allow",
            "Action": "sts:AssumeRole",
            "Resource": "arn:aws:iam::385605022855:role/admin"
        }
    ]
}
```



A policy defines the AWS permissions that you can assign to a user, group, or role. You can create and edit a policy in the visual editor and using JSON. Learn more

```
{
    "Version": "2012-10-17",
    "Statement": [
        {
            "Sid": "AllowAllUsersToListAccounts",
            "Effect": "Allow",
            "Action": [
                "iam:ListAccountAliases",
                "iam:GetAccountPasswordPolicy",
                "iam:ListUsers",
                "iam:GetAccountSummary"
            ],
            "Resource": [
                "*"
            ]
        },
        {
            "Sid": "AllowIndividualUserToSeeTheirAccountInformationAndCreateAccessKey"
,
            "Effect": "Allow",
            "Action": [
                "iam:ChangePassword",
                "iam:CreateLoginProfile",
                "iam:DeleteLoginProfile",
```

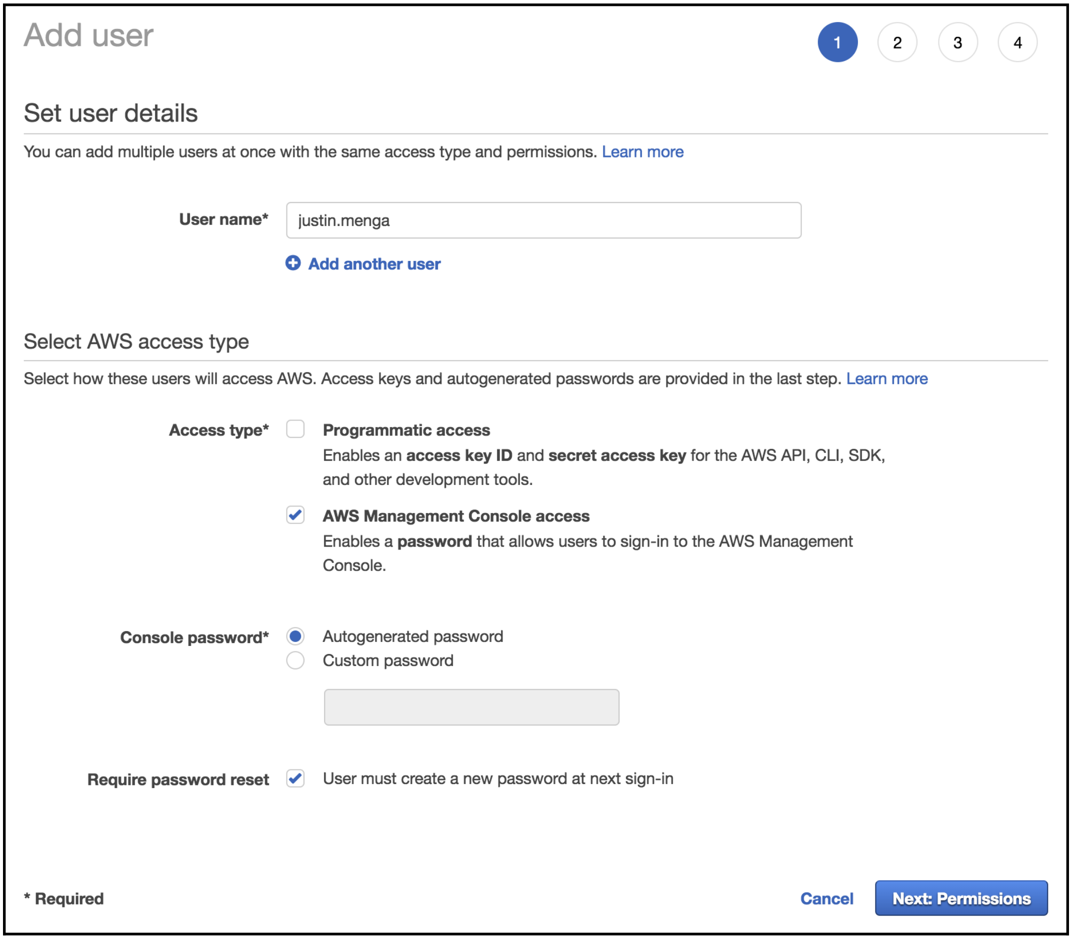


Select one or more policies to attach. Each group can have up to 10 policies attached.

Filter: Policy Type RequireMFA

Showing 1 results

	Policy Name	Attached Entities	Creation Time	Edited Time
☑	RequireMFAPolicy	0	2018-01-29 19:17 UTC+...	2018-01-29 19:17 ...



Add user

Set user details

You can add multiple users at once with the same access type and permissions. Learn more

User name* justin.menga

Select AWS access type

Select how these users will access AWS. Access keys and autogenerated passwords are provided in the last step. Learn more

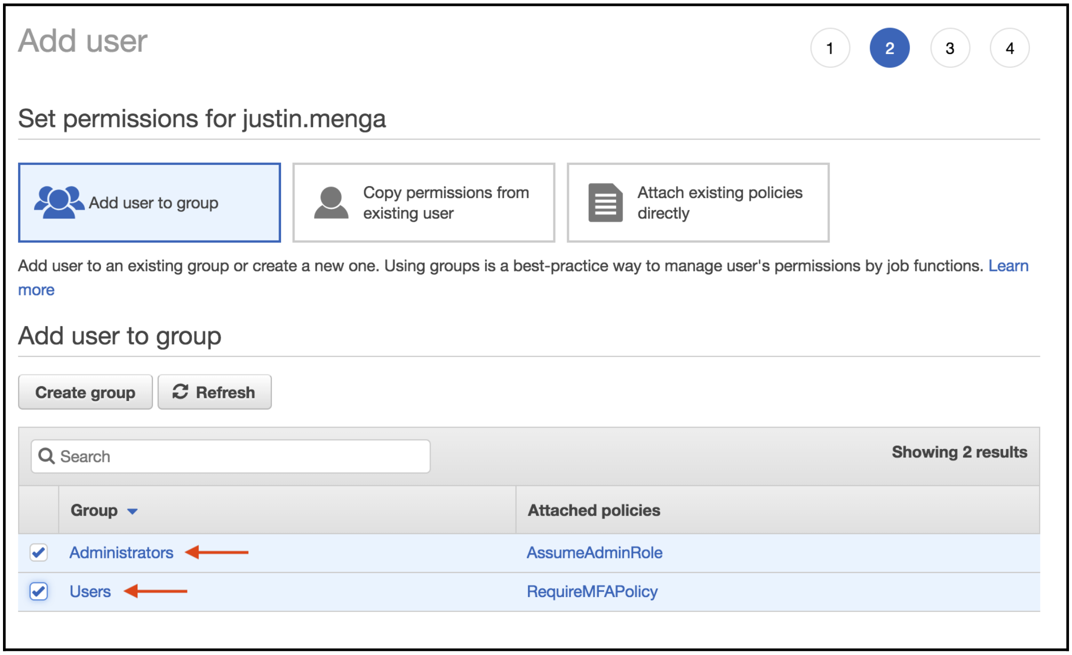
Access type* □ **Programmatic access**
Enables an **access key ID** and **secret access key** for the AWS API, CLI, SDK, and other development tools.

☑ **AWS Management Console access**
Enables a **password** that allows users to sign-in to the AWS Management Console.

Console password* ● Autogenerated password
○ Custom password

Require password reset ☑ User must create a new password at next sign-in

* Required



Add user

Set permissions for justin.menga

Add user to group
Copy permissions from existing user
Attach existing policies directly

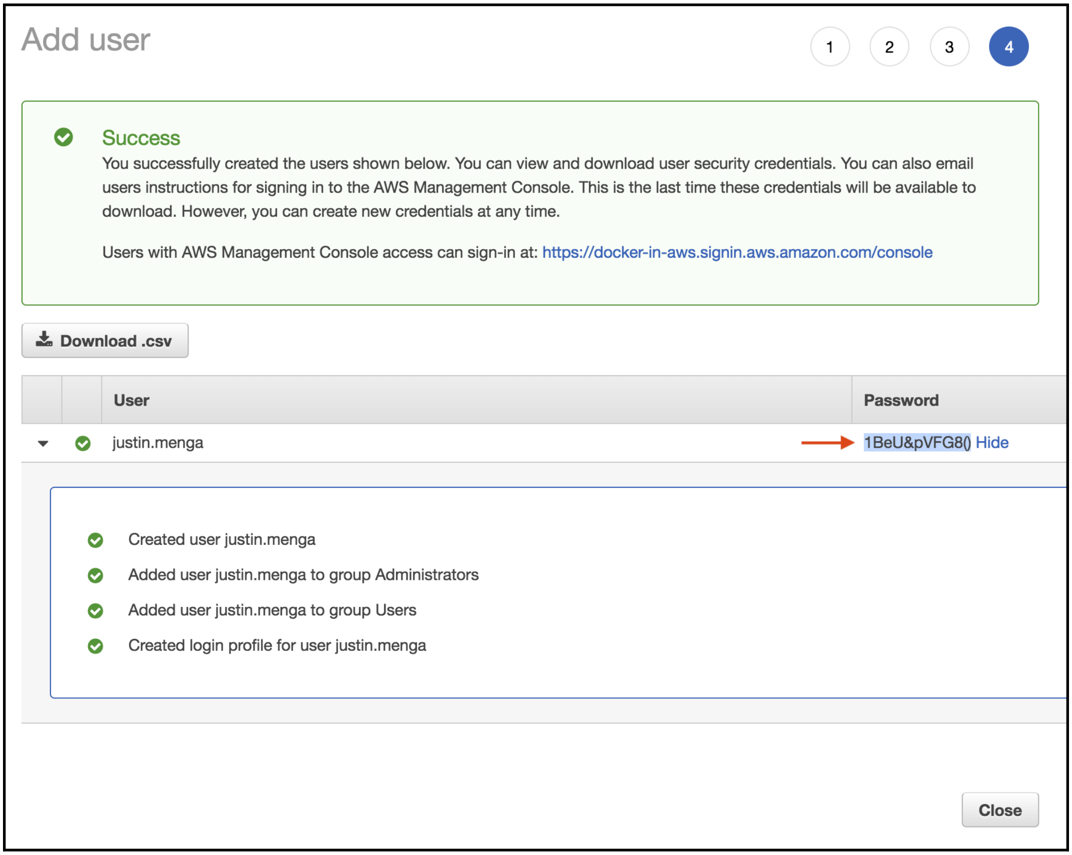
Add user to an existing group or create a new one. Using groups is a best-practice way to manage user's permissions by job functions. Learn more

Add user to group

Create group
Refresh
Search

Showing 2 results

	Group	Attached policies
☑	Administrators	AssumeAdminRole
☑	Users	RequireMFAPolicy



Add user

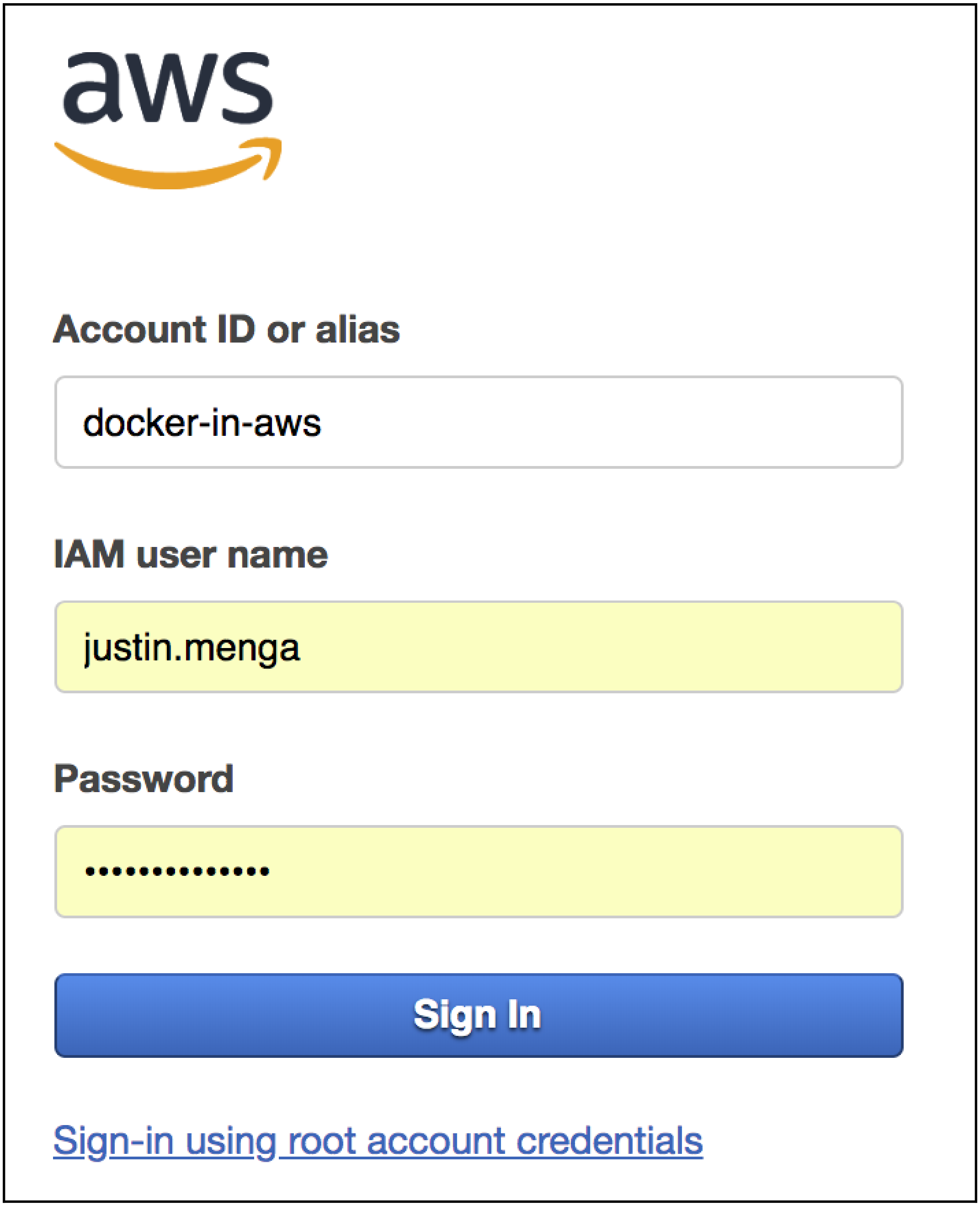
Success

You successfully created the users shown below. You can view and download user security credentials. You can also email users instructions for signing in to the AWS Management Console. This is the last time these credentials will be available to download. However, you can create new credentials at any time.

Users with AWS Management Console access can sign-in at: https://docker-in-aws.signin.aws.amazon.com/console

User	Password
justin.menga	1BeU&pVFG8() Hide

- ✓ Created user justin.menga
- ✓ Added user justin.menga to group Administrators
- ✓ Added user justin.menga to group Users
- ✓ Created login profile for user justin.menga



Account ID or alias

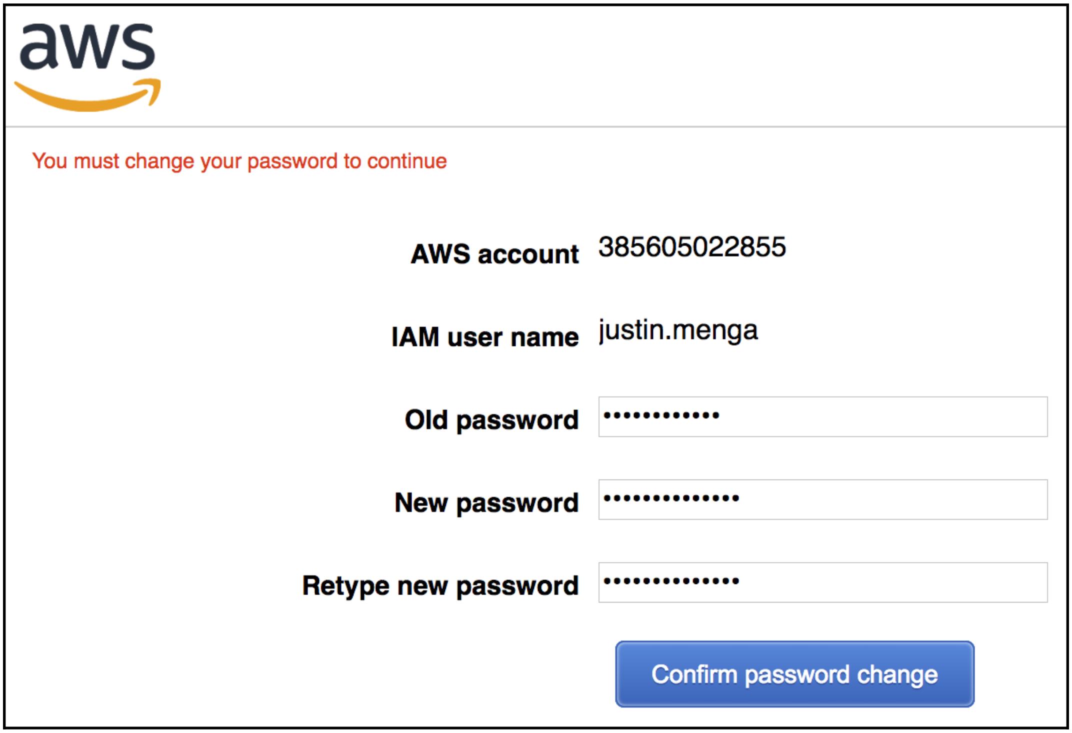
docker-in-aws

IAM user name

justin.menga

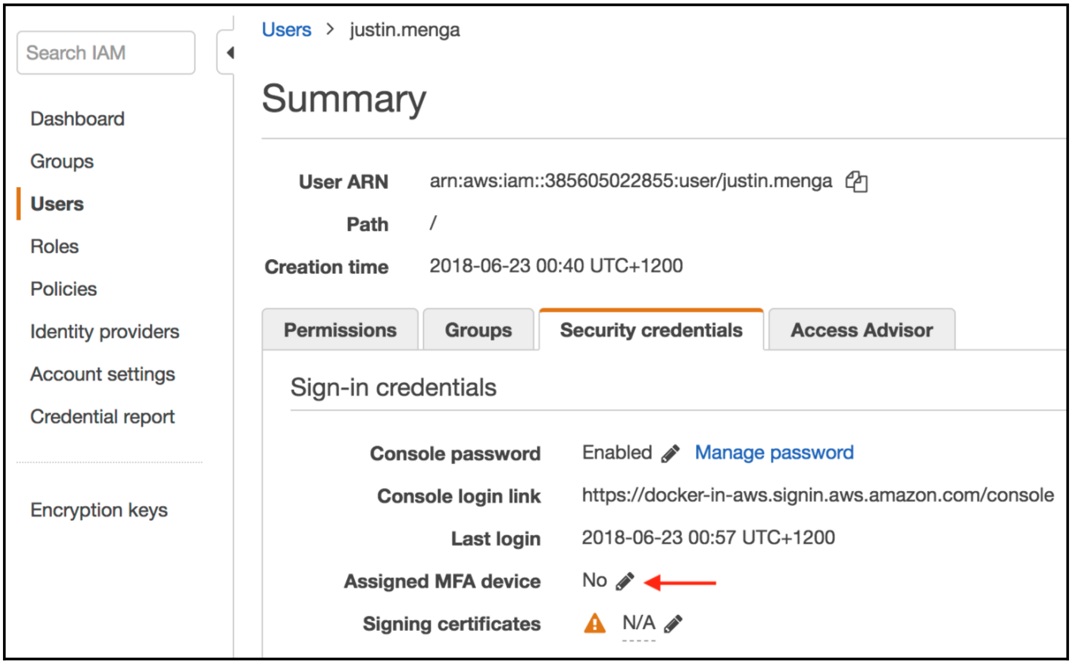
Password

••••••••••••••



You must change your password to continue

AWS account	385605022855
IAM user name	justin.menga
Old password	••••••••••••
New password	••••••••••••••
Retype new password	••••••••••••••



Summary

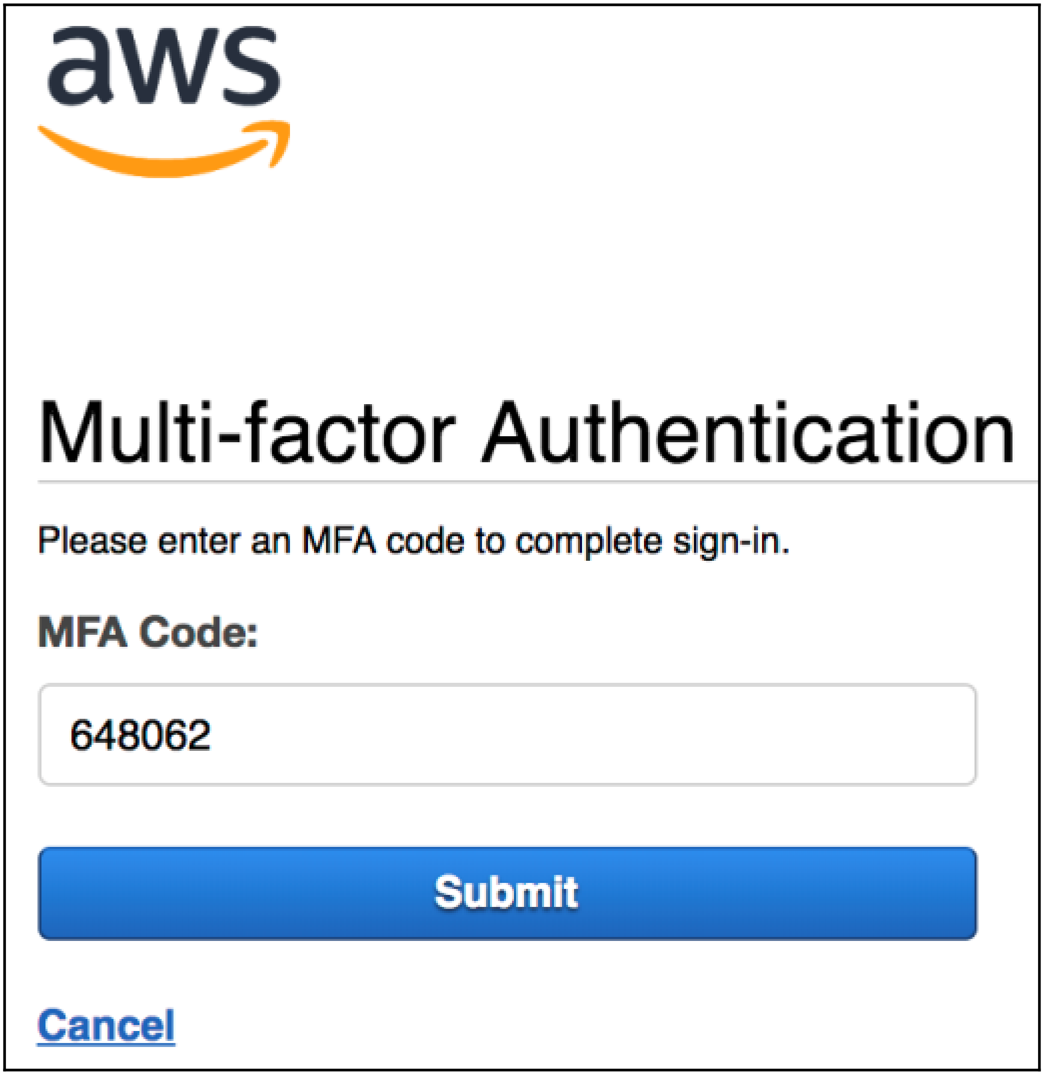
User ARN arn:aws:iam::385605022855:user/justin.menga

Path /

Creation time 2018-06-23 00:40 UTC+1200

Sign-in credentials

Console password	Enabled Manage password
Console login link	https://docker-in-aws.signin.aws.amazon.com/console
Last login	2018-06-23 00:57 UTC+1200
Assigned MFA device	No
Signing certificates	N/A

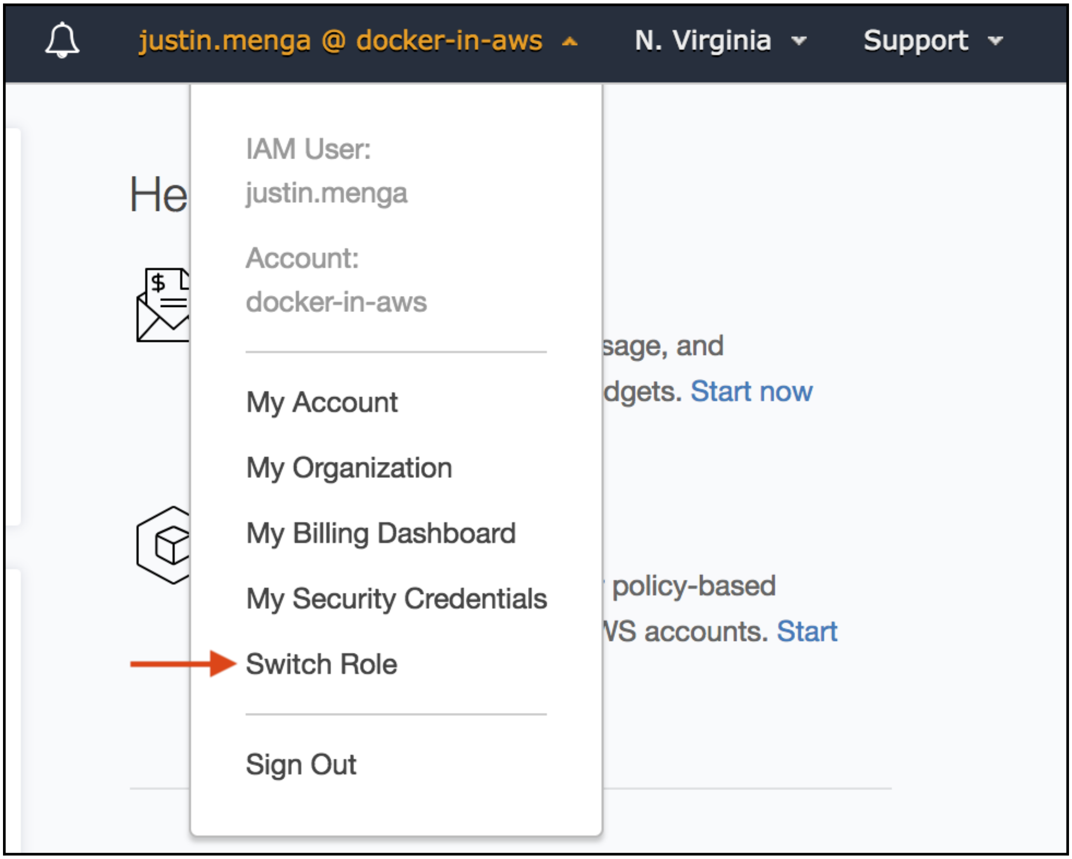


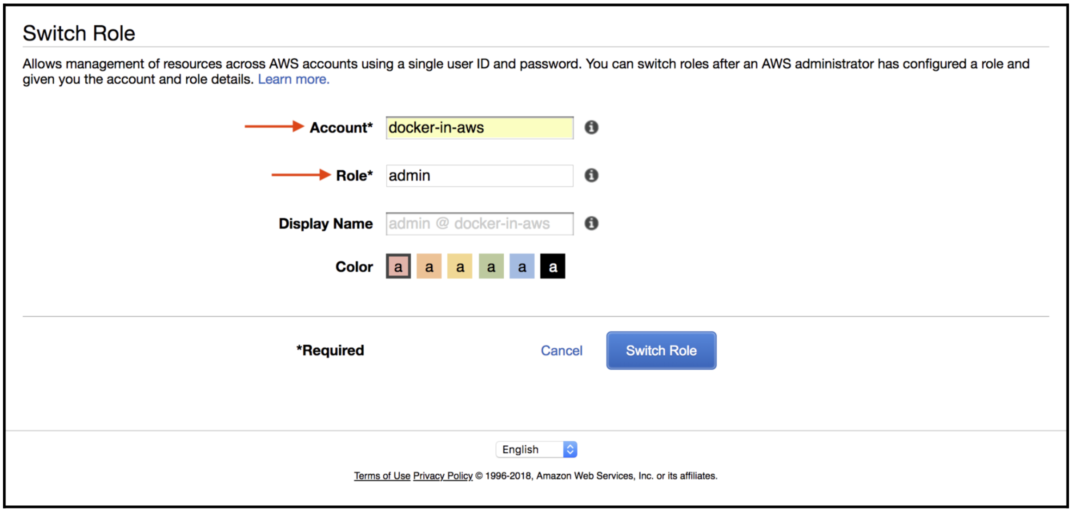
Multi-factor Authentication

Please enter an MFA code to complete sign-in.

MFA Code:

648062

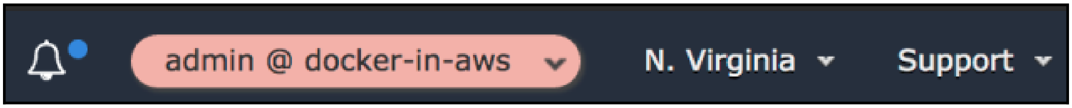


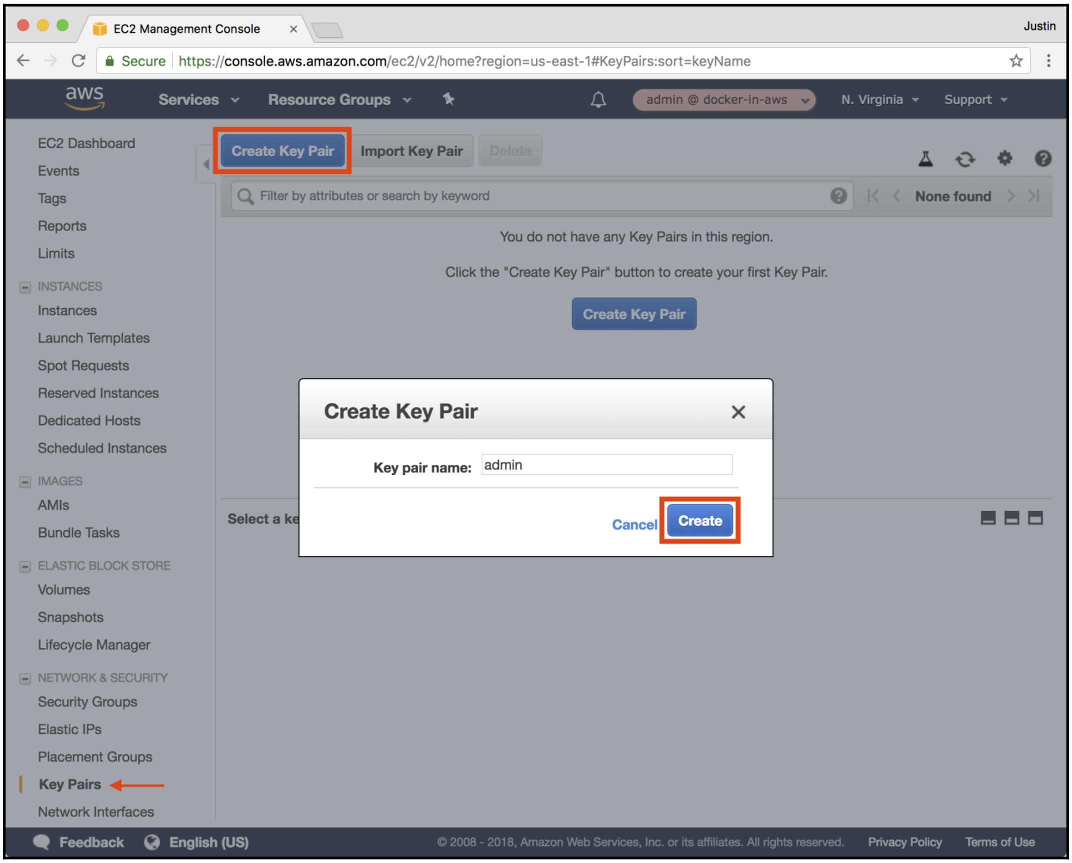

Switch Role

Allows management of resources across AWS accounts using a single user ID and password. You can switch roles after an AWS administrator has configured a role and given you the account and role details. Learn more.

Account*	docker-in-aws
Role*	admin
Display Name	admin @ docker-in-aws
Color	a a a a a a

*Required
Cancel
Switch Role
English
Terms of Use Privacy Policy © 1996-2018, Amazon Web Services, Inc. or its affiliates.





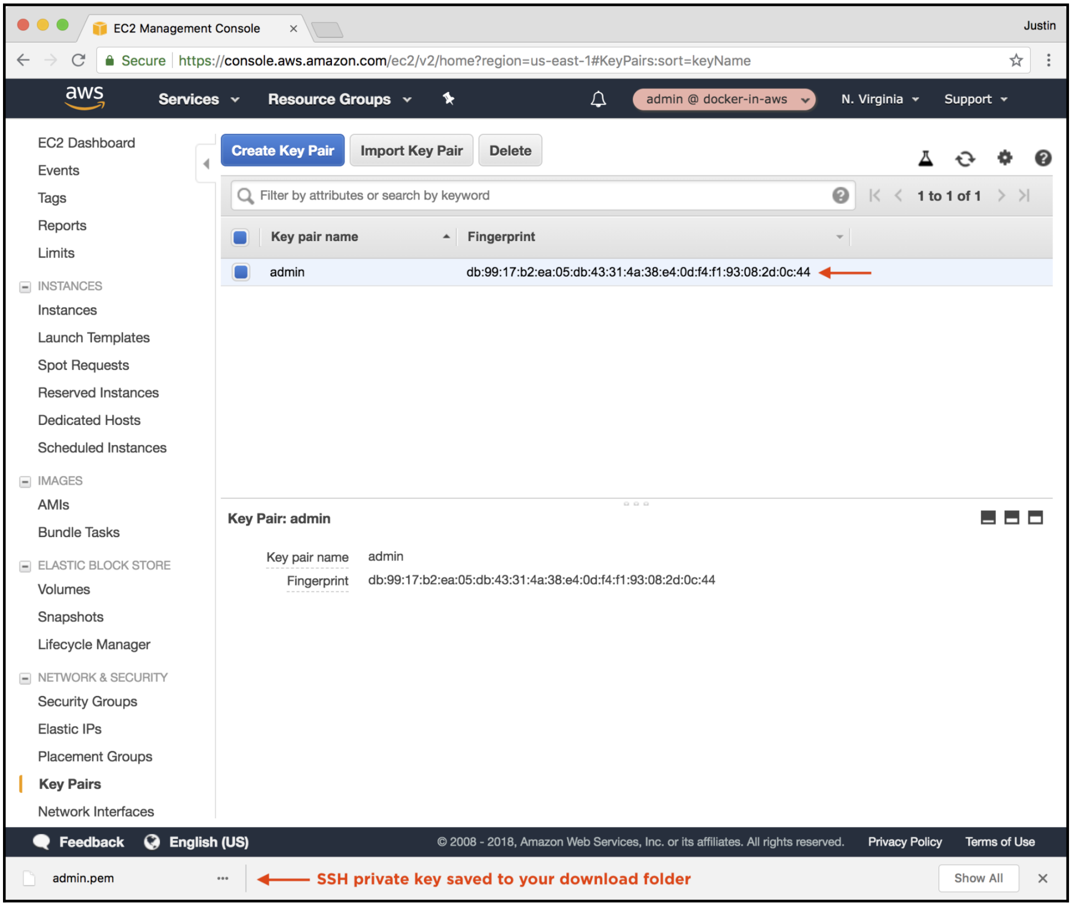
https://console.aws.amazon.com/ec2/v2/home?region=us-east-1#KeyPairs:sort=keyName

You do not have any Key Pairs in this region.

Click the "Create Key Pair" button to create your first Key Pair.

Create Key Pair

Key pair name: admin



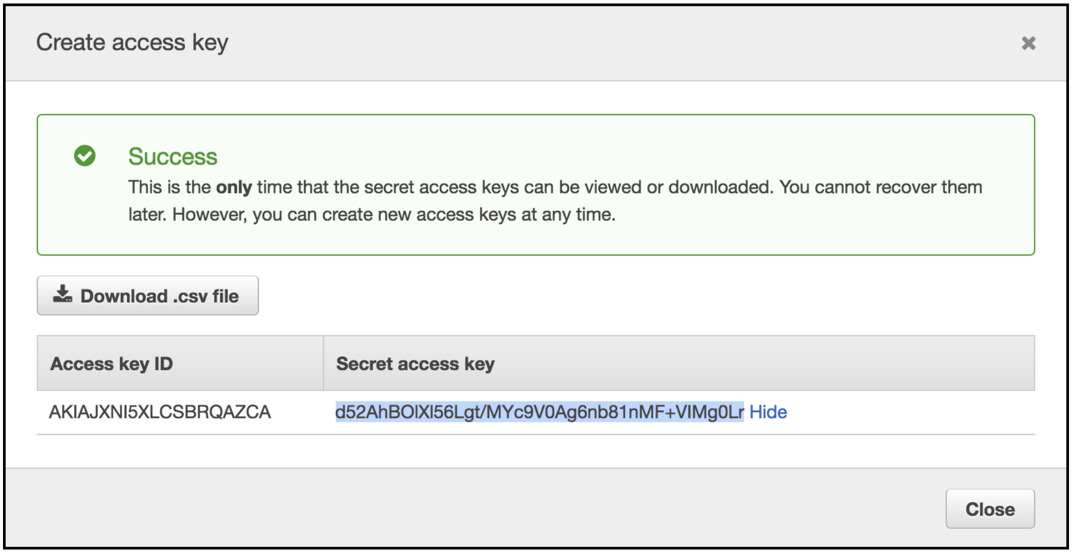
☐	Key pair name	Fingerprint
☐	admin	db:99:17:b2:ea:05:db:43:31:4a:38:e4:0d:f4:f1:93:08:2d:0c:44

Key Pair: admin

Key pair name admin

Fingerprint db:99:17:b2:ea:05:db:43:31:4a:38:e4:0d:f4:f1:93:08:2d:0c:44

SSH private key saved to your download folder

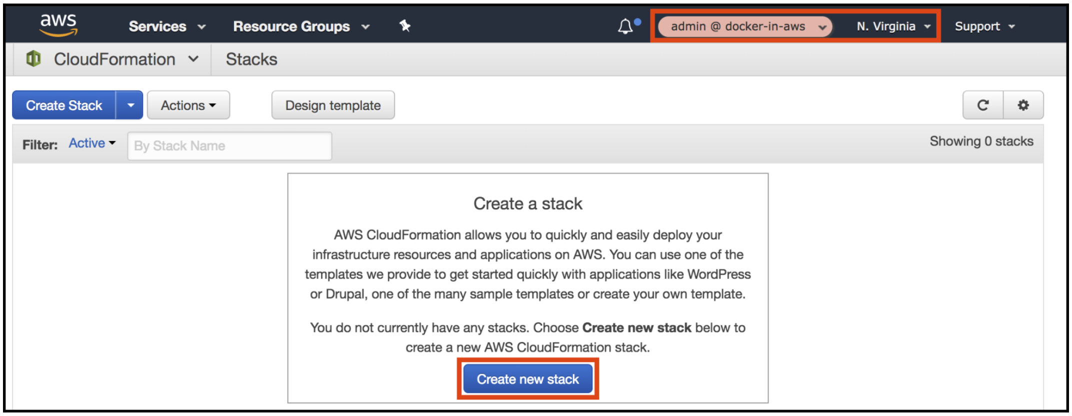


Create access key

Success

This is the **only** time that the secret access keys can be viewed or downloaded. You cannot recover them later. However, you can create new access keys at any time.

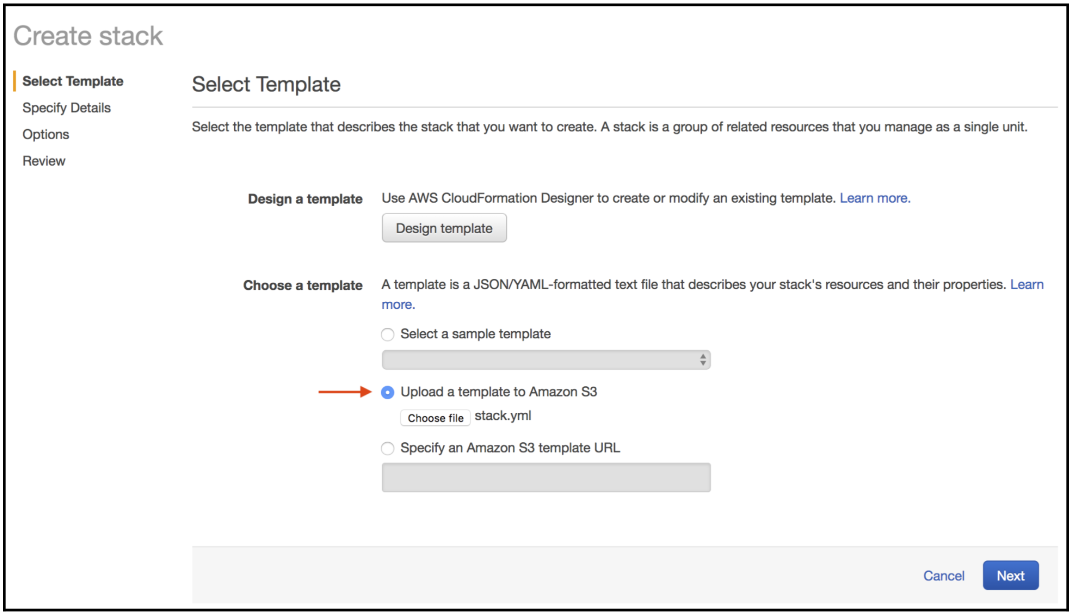
Access key ID	Secret access key
AKIAJXNI5XLCSBRQAZCA	d52AhBOlXl56Lgt/MYc9V0Ag6nb81nMF+VIMg0Lr Hide



Create a stack

AWS CloudFormation allows you to quickly and easily deploy your infrastructure resources and applications on AWS. You can use one of the templates we provide to get started quickly with applications like WordPress or Drupal, one of the many sample templates or create your own template.

You do not currently have any stacks. Choose **Create new stack** below to create a new AWS CloudFormation stack.



Create stack

- **Select Template**
- Specify Details
- Options
- Review

Select Template

Select the template that describes the stack that you want to create. A stack is a group of related resources that you manage as a single unit.

Design a template Use AWS CloudFormation Designer to create or modify an existing template. Learn more.

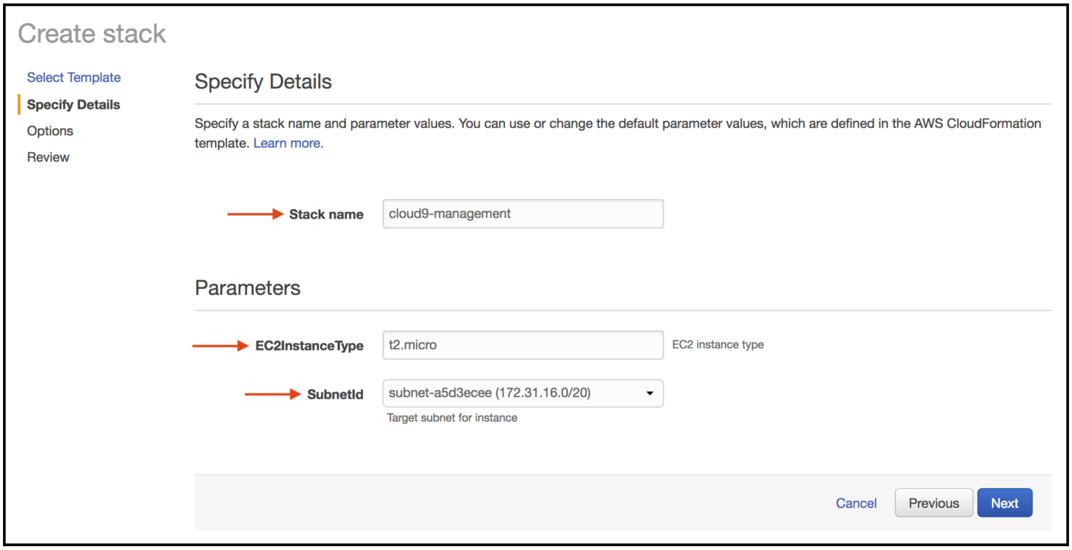
Choose a template A template is a JSON/YAML-formatted text file that describes your stack's resources and their properties. Learn more.

○ Select a sample template

● Upload a template to Amazon S3

Choose file stack.yml

○ Specify an Amazon S3 template URL



Create stack

- Select Template
- **Specify Details**
- Options
- Review

Specify Details

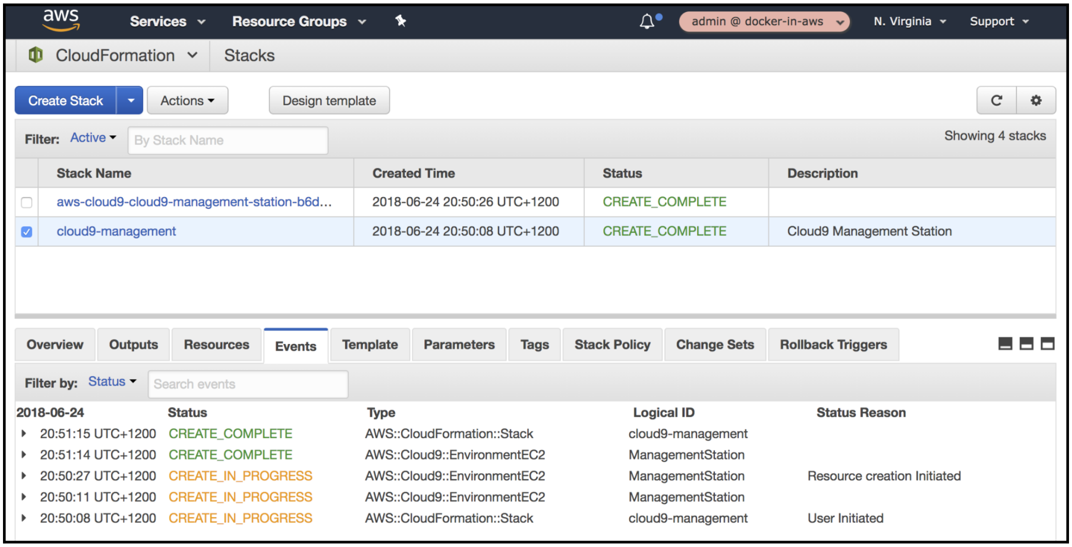
Specify a stack name and parameter values. You can use or change the default parameter values, which are defined in the AWS CloudFormation template. Learn more.

Stack name cloud9-management

Parameters

EC2InstanceType t2.micro EC2 instance type

SubnetId subnet-a5d3ecee (172.31.16.0/20)
Target subnet for instance



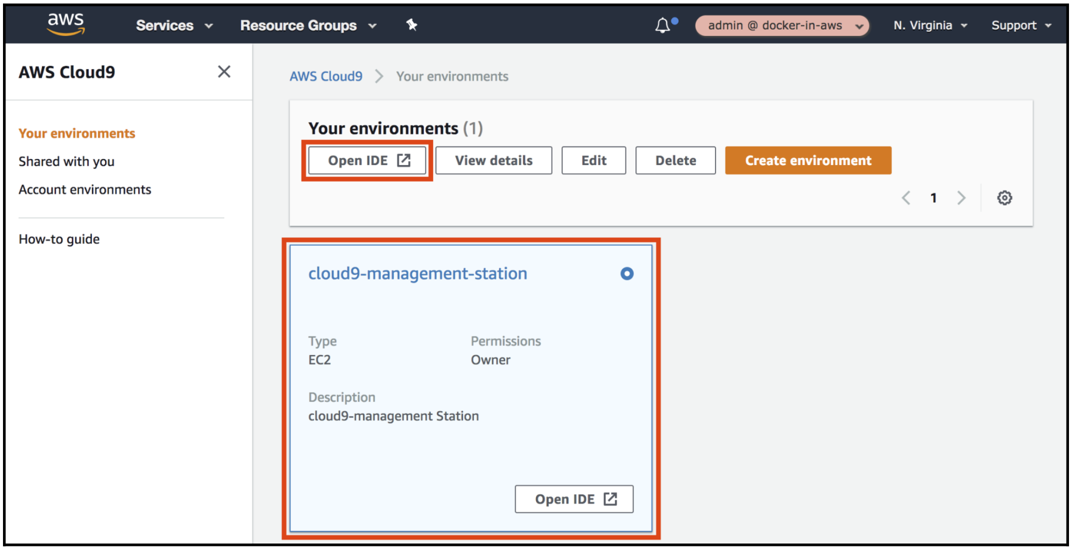
Filter: Active By Stack Name

Showing 4 stacks

	Stack Name	Created Time	Status	Description
□	aws-cloud9-cloud9-management-station-b6d...	2018-06-24 20:50:26 UTC+1200	CREATE_COMPLETE	
☑	cloud9-management	2018-06-24 20:50:08 UTC+1200	CREATE_COMPLETE	Cloud9 Management Station

Filter by: Status Search events

2018-06-24	Status	Type	Logical ID	Status Reason
20:51:15 UTC+1200	CREATE_COMPLETE	AWS::CloudFormation::Stack	cloud9-management	
20:51:14 UTC+1200	CREATE_COMPLETE	AWS::Cloud9::EnvironmentEC2	ManagementStation	
20:50:27 UTC+1200	CREATE_IN_PROGRESS	AWS::Cloud9::EnvironmentEC2	ManagementStation	Resource creation Initiated
20:50:11 UTC+1200	CREATE_IN_PROGRESS	AWS::Cloud9::EnvironmentEC2	ManagementStation	
20:50:08 UTC+1200	CREATE_IN_PROGRESS	AWS::CloudFormation::Stack	cloud9-management	User Initiated



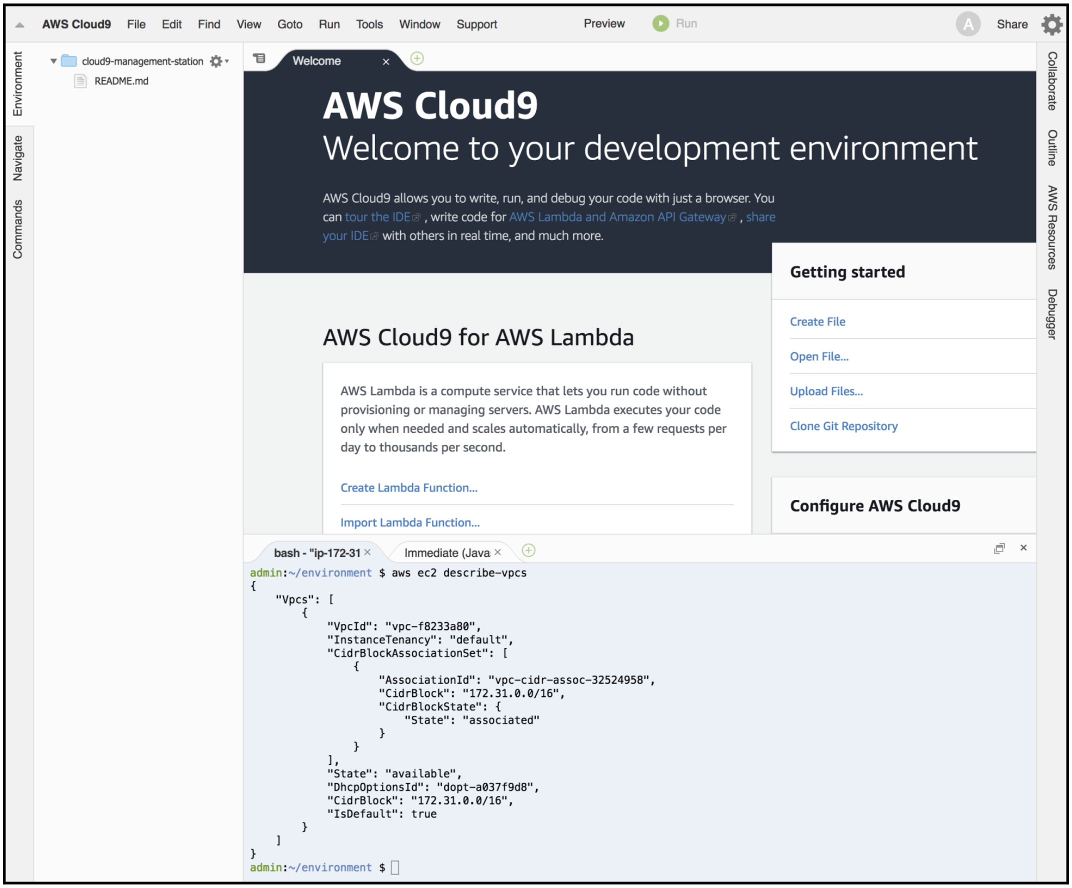
Your environments (1)

cloud9-management-station

Type
EC2

Permissions
Owner

Description
cloud9-management Station



AWS Cloud9

Welcome to your development environment

AWS Cloud9 allows you to write, run, and debug your code with just a browser. You can tour the IDE, write code for AWS Lambda and Amazon API Gateway, share your IDE with others in real time, and much more.

Getting started

Create File

Open File...

Upload Files...

Clone Git Repository

AWS Cloud9 for AWS Lambda

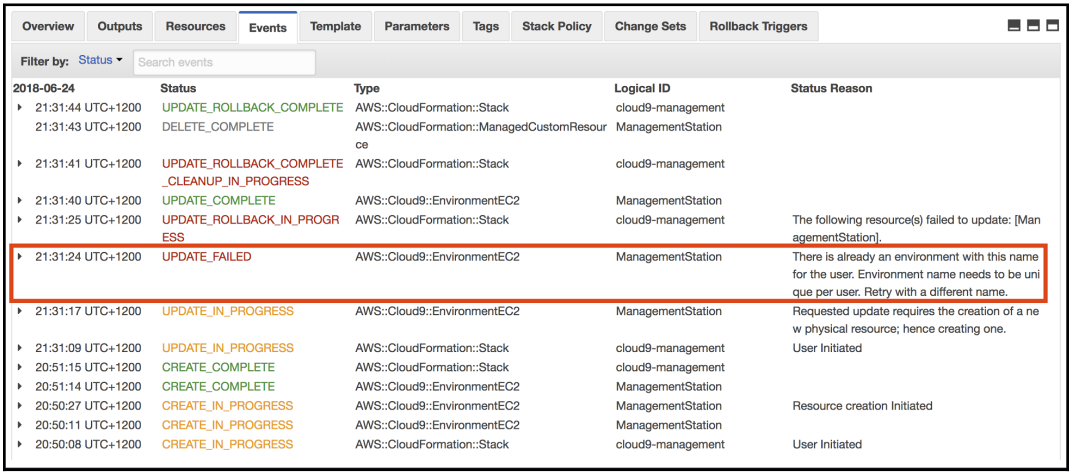
AWS Lambda is a compute service that lets you run code without provisioning or managing servers. AWS Lambda executes your code only when needed and scales automatically, from a few requests per day to thousands per second.

Create Lambda Function...

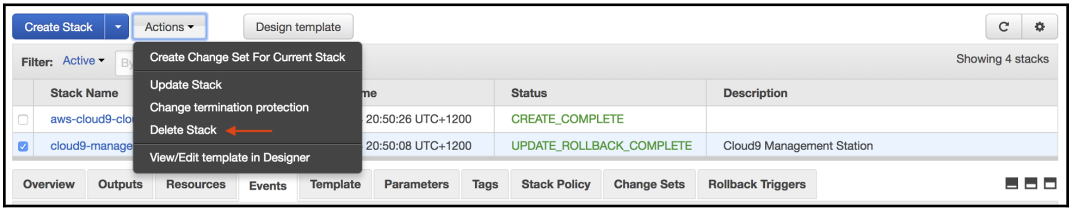
Import Lambda Function...

Configure AWS Cloud9

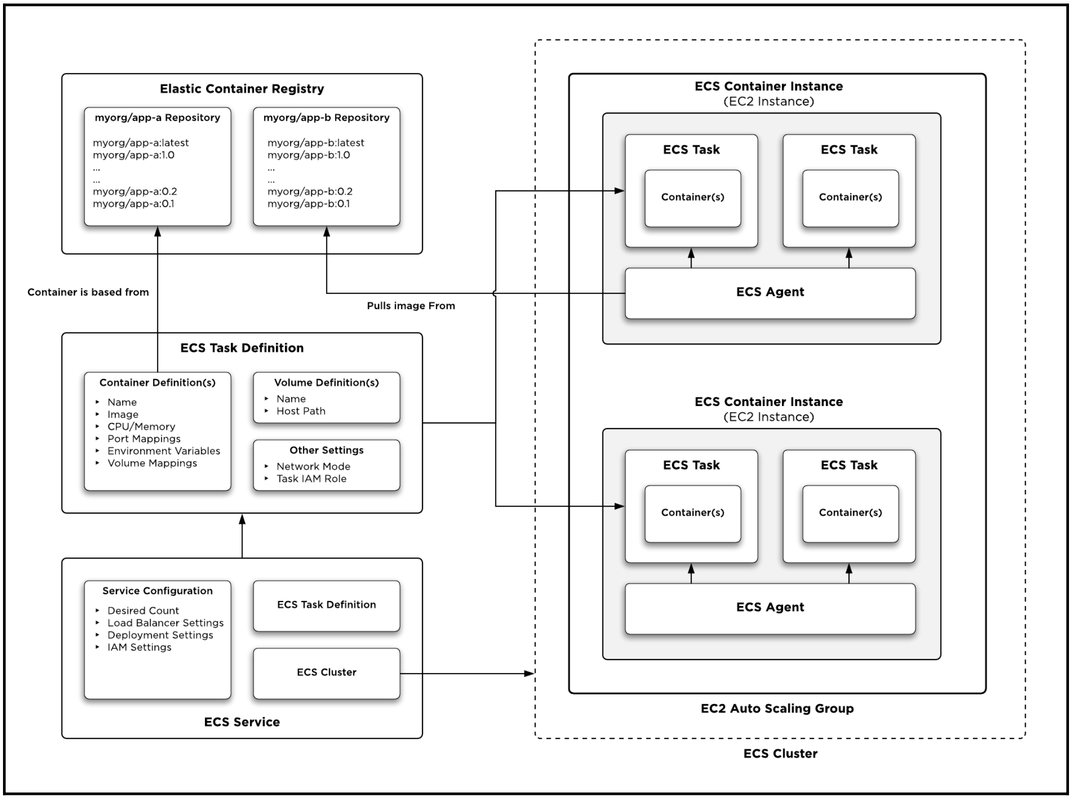
```
admin:~/environment $ aws ec2 describe-vpcs
{
    "Vpcs": [
        {
            "VpcId": "vpc-f8233a80",
            "InstanceTenancy": "default",
            "CidrBlockAssociationSet": [
                {
                    "AssociationId": "vpc-cidr-assoc-32524958",
                    "CidrBlock": "172.31.0.0/16",
                    "CidrBlockState": {
                        "State": "associated"
                    }
                }
            ],
            "State": "available",
            "DhcpOptionsId": "dopt-a037f9d8",
            "CidrBlock": "172.31.0.0/16",
            "IsDefault": true
        }
    ]
}
admin:~/environment $ 
```

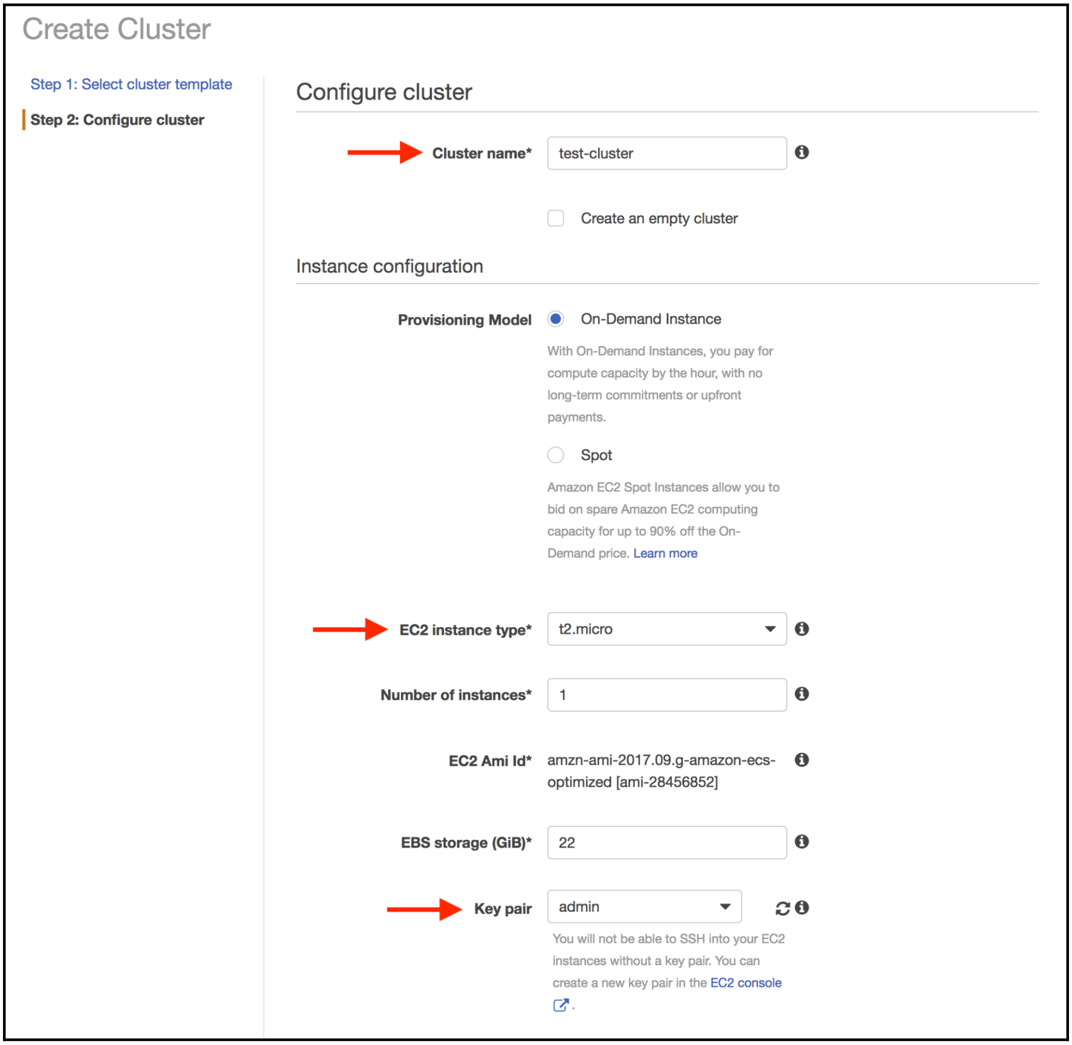


2018-06-24	Status	Type	Logical ID	Status Reason
21:31:44 UTC+1200	UPDATE_ROLLBACK_COMPLETE	AWS::CloudFormation::Stack	cloud9-management	
21:31:43 UTC+1200	DELETE_COMPLETE	AWS::CloudFormation::ManagedCustomResource	ManagementStation	
21:31:41 UTC+1200	UPDATE_ROLLBACK_COMPLETE_CLEANUP_IN_PROGRESS	AWS::CloudFormation::Stack	cloud9-management	
21:31:40 UTC+1200	UPDATE_COMPLETE	AWS::Cloud9::EnvironmentEC2	ManagementStation	
21:31:25 UTC+1200	UPDATE_ROLLBACK_IN_PROGRESS	AWS::CloudFormation::Stack	cloud9-management	The following resource(s) failed to update: [ManagementStation].
21:31:24 UTC+1200	UPDATE_FAILED	AWS::Cloud9::EnvironmentEC2	ManagementStation	There is already an environment with this name for the user. Environment name needs to be unique per user. Retry with a different name.
21:31:17 UTC+1200	UPDATE_IN_PROGRESS	AWS::Cloud9::EnvironmentEC2	ManagementStation	Requested update requires the creation of a new physical resource; hence creating one.
21:31:09 UTC+1200	UPDATE_IN_PROGRESS	AWS::CloudFormation::Stack	cloud9-management	User Initiated
20:51:15 UTC+1200	CREATE_COMPLETE	AWS::CloudFormation::Stack	cloud9-management	
20:51:14 UTC+1200	CREATE_COMPLETE	AWS::Cloud9::EnvironmentEC2	ManagementStation	
20:50:27 UTC+1200	CREATE_IN_PROGRESS	AWS::Cloud9::EnvironmentEC2	ManagementStation	Resource creation Initiated
20:50:11 UTC+1200	CREATE_IN_PROGRESS	AWS::Cloud9::EnvironmentEC2	ManagementStation	
20:50:08 UTC+1200	CREATE_IN_PROGRESS	AWS::CloudFormation::Stack	cloud9-management	User Initiated



	Stack Name	me	Status	Description
□	aws-cloud9-clo	20:50:26 UTC+1200	CREATE_COMPLETE	
☑	cloud9-manage	20:50:08 UTC+1200	UPDATE_ROLLBACK_COMPLETE	Cloud9 Management Station


Elastic Container Registry
myorg/app-a Repository
myorg/app-a:latest
myorg/app-a:1.0
...
...
myorg/app-a:0.2
myorg/app-a:0.1
myorg/app-b Repository
myorg/app-b:latest
myorg/app-b:1.0
...
...
myorg/app-b:0.2
myorg/app-b:0.1
Container is based from
Pulls image From
ECS Task Definition
Container Definition(s)
Name
Image
CPU/Memory
Port Mappings
Environment Variables
Volume Mappings
Volume Definition(s)
Name
Host Path
Other Settings
Network Mode
Task IAM Role
Service Configuration
Desired Count
Load Balancer Settings
Deployment Settings
IAM Settings
ECS Task Definition
ECS Cluster
ECS Service
ECS Container Instance
(EC2 Instance)
ECS Task
Container(s)
ECS Task
Container(s)
ECS Agent
ECS Container Instance
(EC2 Instance)
ECS Task
Container(s)
ECS Task
Container(s)
ECS Agent
EC2 Auto Scaling Group
ECS Cluster



Create Cluster

Step 1: Select cluster template

Step 2: Configure cluster

Configure cluster

Cluster name* test-cluster

□ Create an empty cluster

Instance configuration

Provisioning Model ● On-Demand Instance

With On-Demand Instances, you pay for compute capacity by the hour, with no long-term commitments or upfront payments.

○ Spot

Amazon EC2 Spot Instances allow you to bid on spare Amazon EC2 computing capacity for up to 90% off the On-Demand price. Learn more

EC2 instance type* t2.micro

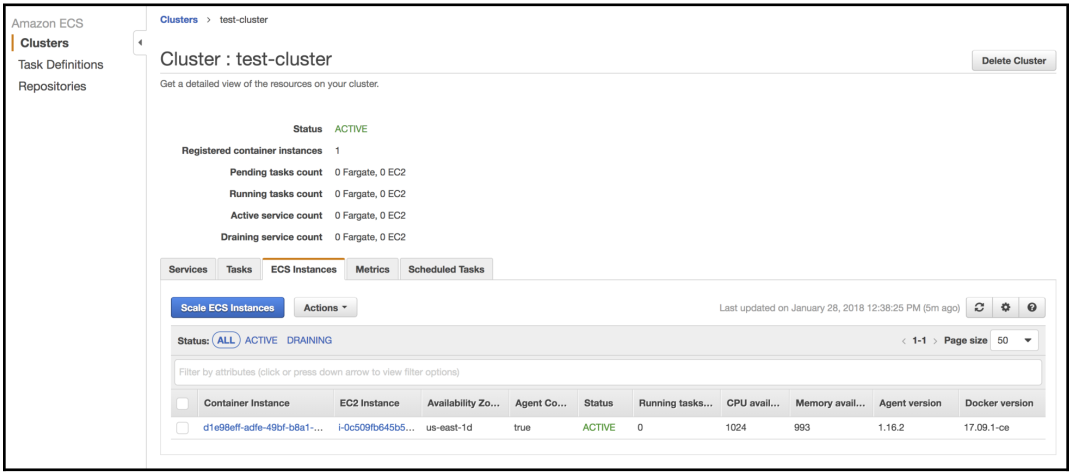
Number of instances* 1

EC2 Ami Id* amzn-ami-2017.09.g-amazon-ecs-optimized [ami-28456852]

EBS storage (GiB)* 22

Key pair admin

You will not be able to SSH into your EC2 instances without a key pair. You can create a new key pair in the EC2 console .



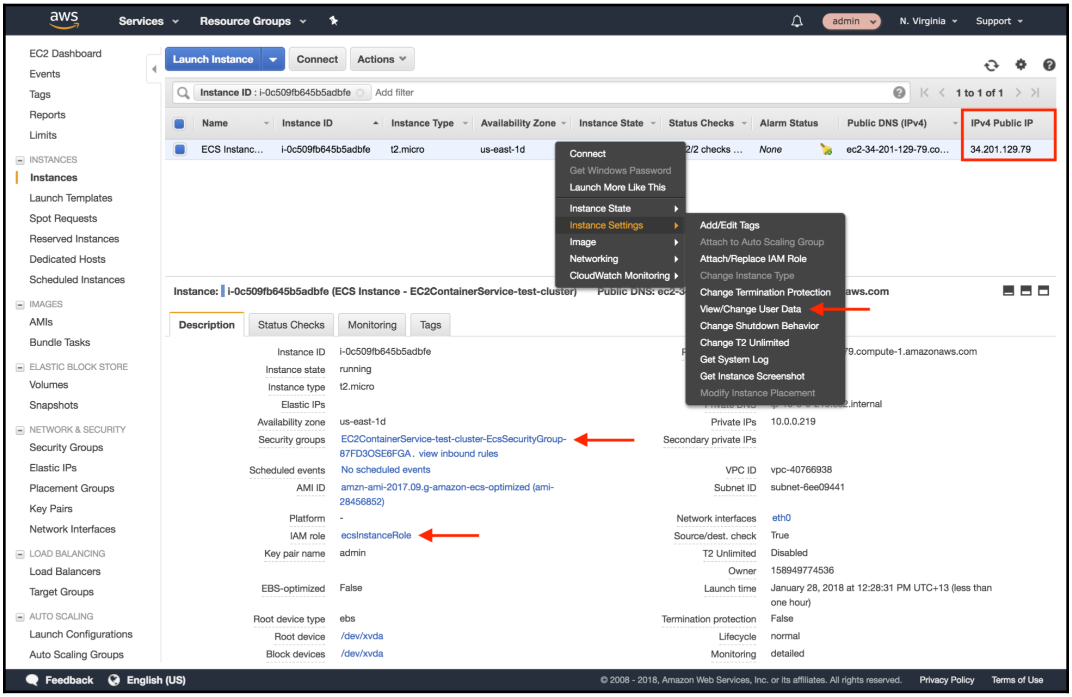
Cluster : test-cluster

Get a detailed view of the resources on your cluster.

Status	ACTIVE
Registered container instances	1
Pending tasks count	0 Fargate, 0 EC2
Running tasks count	0 Fargate, 0 EC2
Active service count	0 Fargate, 0 EC2
Draining service count	0 Fargate, 0 EC2

Last updated on January 28, 2018 12:38:25 PM (5m ago)

Container Instance	EC2 Instance	Availability Zo...	Agent Co...	Status	Running tasks...	CPU avail...	Memory avail...	Agent version	Docker version
d1e98eff-adfe-49bf-b8a1-...	i-0c509fb645b5...	us-east-1d	true	ACTIVE	0	1024	993	1.16.2	17.09.1-ce

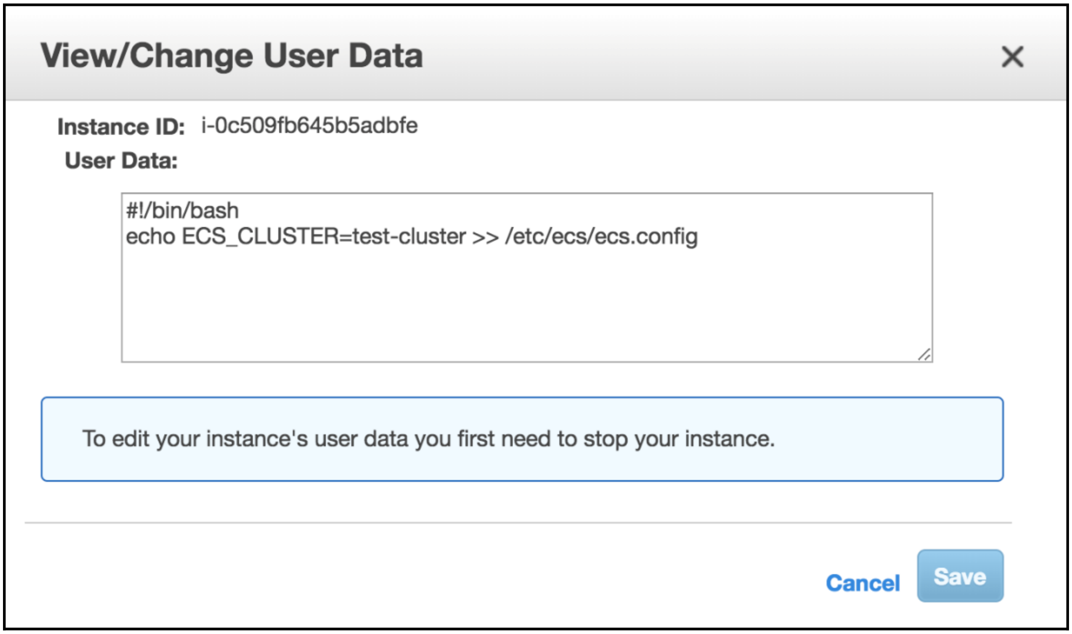


Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks	Alarm Status	Public DNS (IPv4)	IPv4 Public IP
ECS Instanc...	i-0c509fb645b5adbfe	t2.micro	us-east-1d		2/2 checks ...	None	ec2-34-201-129-79.co...	34.201.129.79

Instance: i-0c509fb645b5adbfe (ECS Instance - EC2ContainerService-test-cluster) Public DNS: ec2-3 ... aws.com

Instance ID	i-0c509fb645b5adbfe		...9.compute-1.amazonaws.com
Instance state	running		
Instance type	t2.micro		
Elastic IPs			...2.internal
Availability zone	us-east-1d	Private IPs	10.0.0.219
Security groups	EC2ContainerService-test-cluster-EcsSecurityGroup-87FD3OSE6FGA. view inbound rules	Secondary private IPs	
Scheduled events	No scheduled events	VPC ID	vpc-40766938
AMI ID	amzn-ami-2017.09.g-amazon-ecs-optimized (ami-28456852)	Subnet ID	subnet-6ee09441
Platform	-	Network interfaces	eth0
IAM role	ecsInstanceRole	Source/dest. check	True
Key pair name	admin	T2 Unlimited	Disabled
		Owner	158949774536
EBS-optimized	False	Launch time	January 28, 2018 at 12:28:31 PM UTC+13 (less than one hour)
Root device type	ebs	Termination protection	False
Root device	/dev/xvda	Lifecycle	normal
Block devices	/dev/xvda	Monitoring	detailed

© 2008 - 2018, Amazon Web Services, Inc. or its affiliates. All rights reserved.



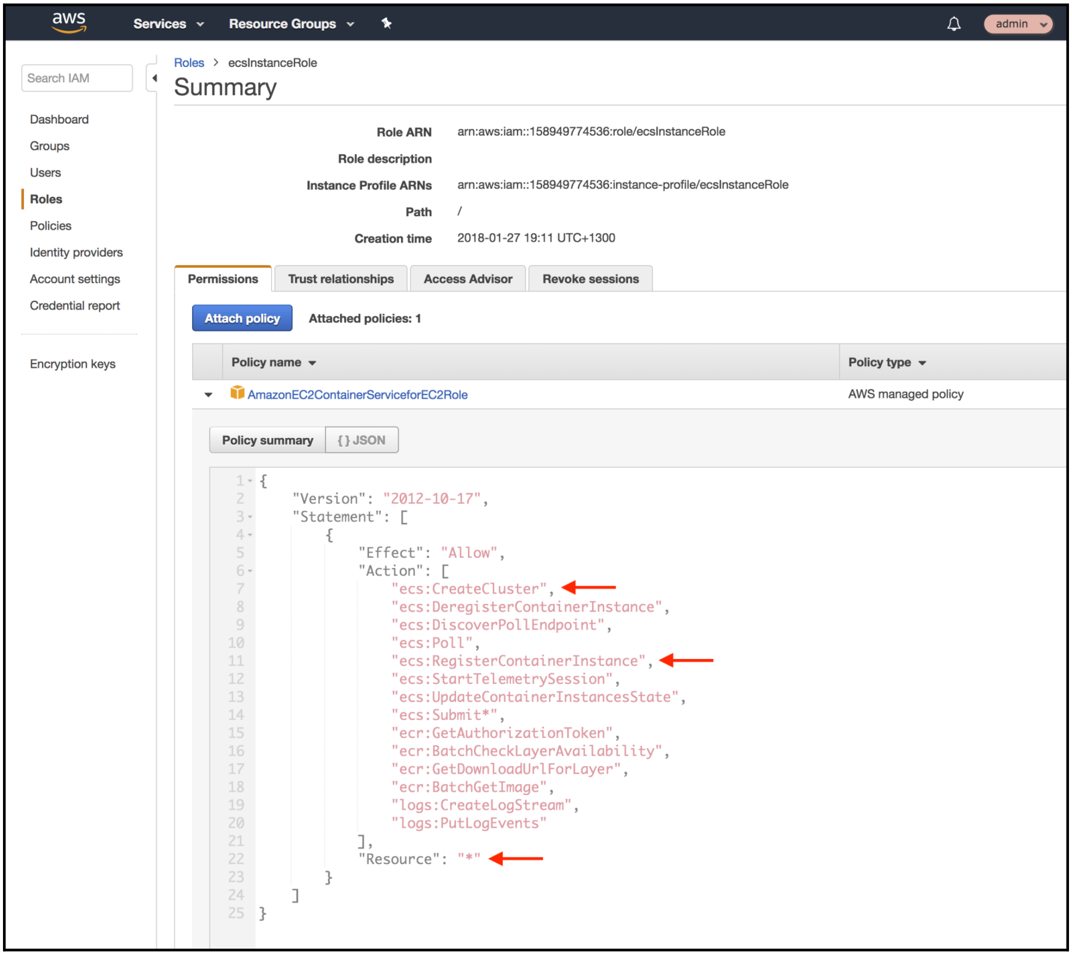
View/Change User Data

Instance ID: i-0c509fb645b5adbfe

User Data:

```
#!/bin/bash
echo ECS_CLUSTER=test-cluster >> /etc/ecs/ecs.config
```

To edit your instance's user data you first need to stop your instance.



Role ARN arn:aws:iam::158949774536:role/ecsInstanceRole

Role description

Instance Profile ARNs arn:aws:iam::158949774536:instance-profile/ecsInstanceRole

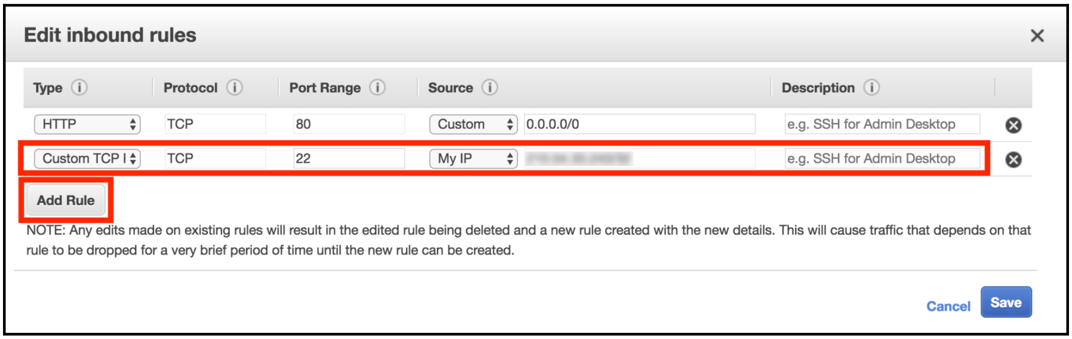
Path /

Creation time 2018-01-27 19:11 UTC+1300

Attached policies: 1

Policy name	Policy type
AmazonEC2ContainerServiceforEC2Role	AWS managed policy

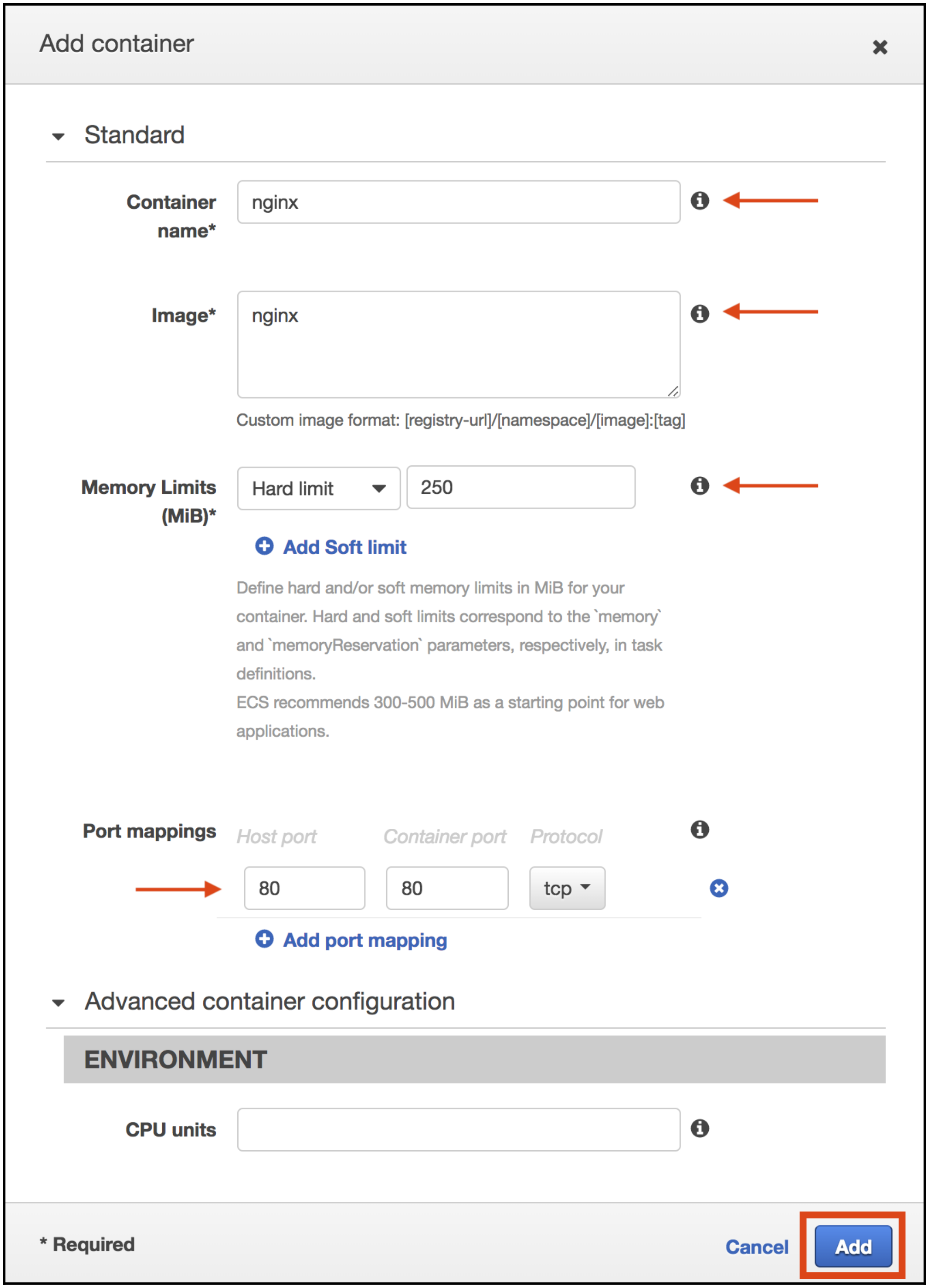
```
{
    "Version": "2012-10-17",
    "Statement": [
        {
            "Effect": "Allow",
            "Action": [
                "ecs:CreateCluster",
                "ecs:DeregisterContainerInstance",
                "ecs:DiscoverPollEndpoint",
                "ecs:Poll",
                "ecs:RegisterContainerInstance",
                "ecs:StartTelemetrySession",
                "ecs:UpdateContainerInstancesState",
                "ecs:Submit*",
                "ecr:GetAuthorizationToken",
                "ecr:BatchCheckLayerAvailability",
                "ecr:GetDownloadUrlForLayer",
                "ecr:BatchGetImage",
                "logs:CreateLogStream",
                "logs:PutLogEvents"
            ],
            "Resource": "*"
        }
    ]
}
```



Edit inbound rules

Type	Protocol	Port Range	Source		Description
HTTP	TCP	80	Custom	0.0.0.0/0	e.g. SSH for Admin Desktop
Custom TCP I	TCP	22	My IP	[redacted]	e.g. SSH for Admin Desktop

NOTE: Any edits made on existing rules will result in the edited rule being deleted and a new rule created with the new details. This will cause traffic that depends on that rule to be dropped for a very brief period of time until the new rule can be created.



Add container

Standard

Container name*: nginx

Image*: nginx

Custom image format: [registry-url]/[namespace]/[image]:[tag]

Memory Limits (MiB)*: Hard limit 250

Define hard and/or soft memory limits in MiB for your container. Hard and soft limits correspond to the `memory` and `memoryReservation` parameters, respectively, in task definitions.

ECS recommends 300-500 MiB as a starting point for web applications.

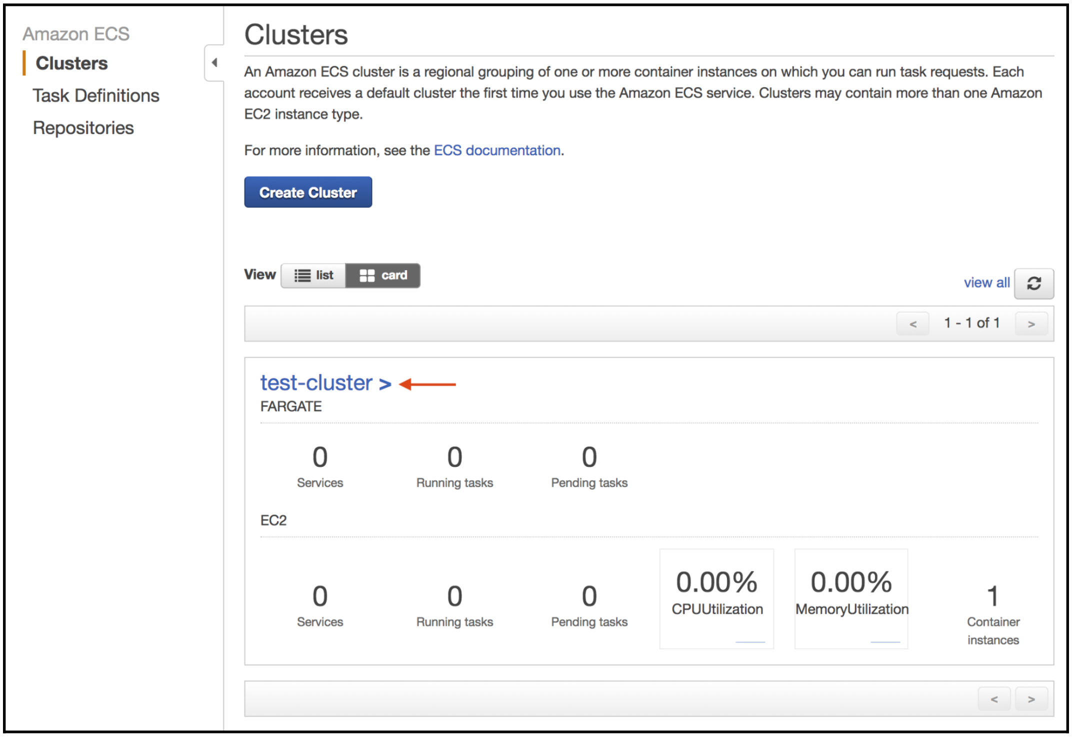
Port mappings	Host port	Container port	Protocol
	80	80	tcp

Advanced container configuration

ENVIRONMENT

CPU units:

* Required



Clusters

An Amazon ECS cluster is a regional grouping of one or more container instances on which you can run task requests. Each account receives a default cluster the first time you use the Amazon ECS service. Clusters may contain more than one Amazon EC2 instance type.

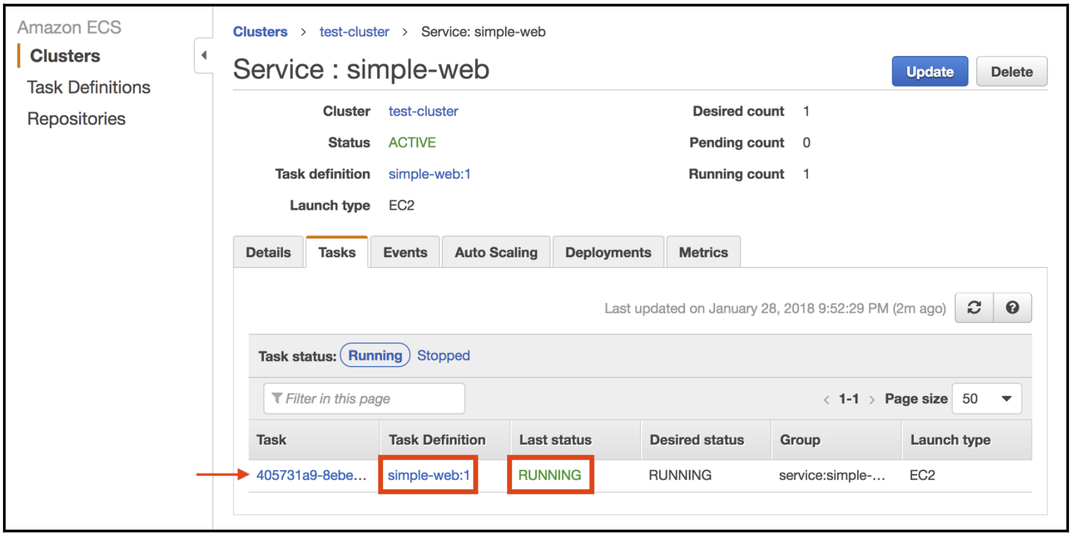
For more information, see the ECS documentation.

FARGATE

0	0	0
Services	Running tasks	Pending tasks

EC2

0	0	0	0.00%	0.00%	1
Services	Running tasks	Pending tasks	CPUUtilization	MemoryUtilization	Container instances



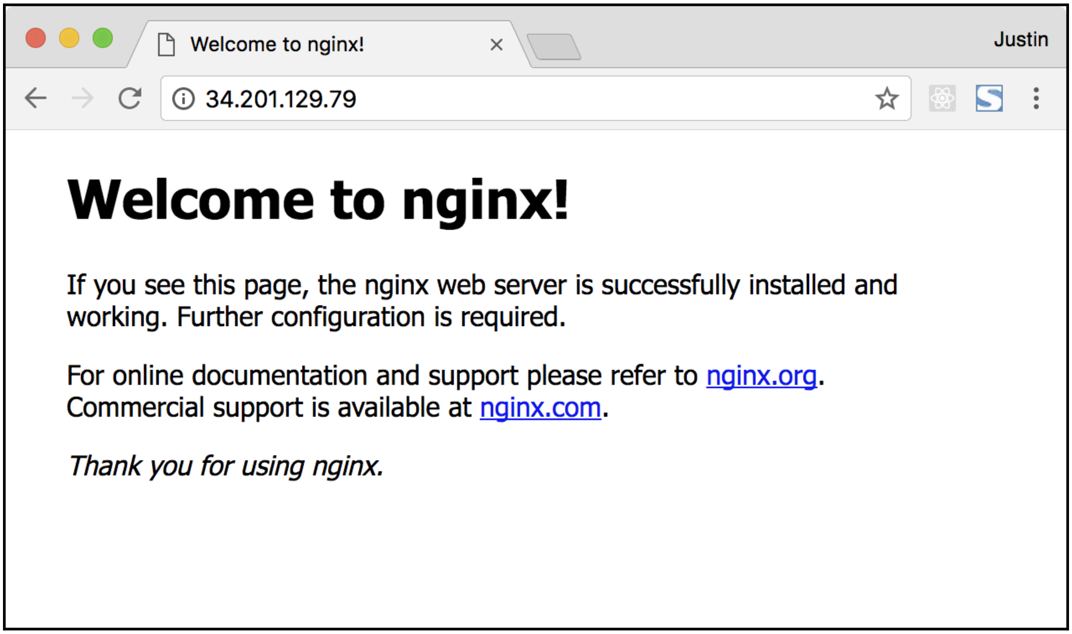
Service : simple-web

Cluster	test-cluster	Desired count	1
Status	ACTIVE	Pending count	0
Task definition	simple-web:1	Running count	1
Launch type	EC2		

Last updated on January 28, 2018 9:52:29 PM (2m ago)

Task status: Running Stopped

Task	Task Definition	Last status	Desired status	Group	Launch type
405731a9-8ebe…	simple-web:1	RUNNING	RUNNING	service:simple-…	EC2

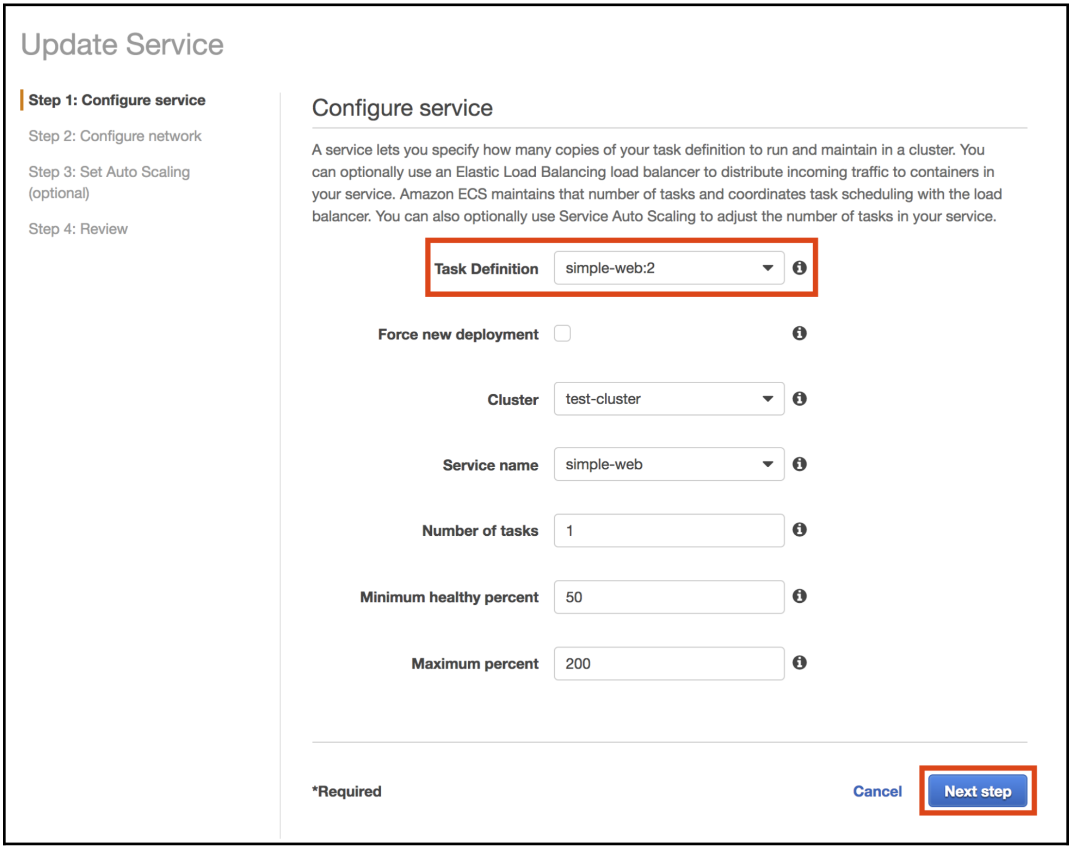


Welcome to nginx!

If you see this page, the nginx web server is successfully installed and working. Further configuration is required.

For online documentation and support please refer to nginx.org. Commercial support is available at nginx.com.

Thank you for using nginx.



Update Service

Step 1: Configure service

Step 2: Configure network

Step 3: Set Auto Scaling (optional)

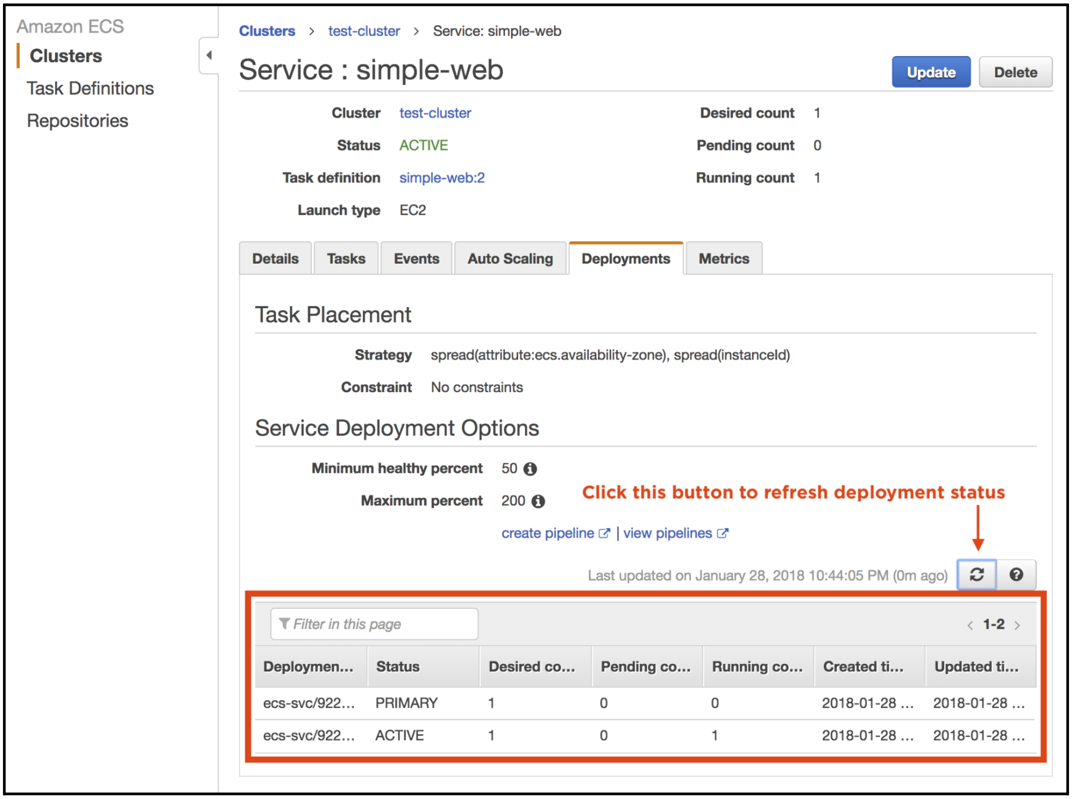
Step 4: Review

Configure service

A service lets you specify how many copies of your task definition to run and maintain in a cluster. You can optionally use an Elastic Load Balancing load balancer to distribute incoming traffic to containers in your service. Amazon ECS maintains that number of tasks and coordinates task scheduling with the load balancer. You can also optionally use Service Auto Scaling to adjust the number of tasks in your service.

Task Definition	simple-web:2
Force new deployment	□
Cluster	test-cluster
Service name	simple-web
Number of tasks	1
Minimum healthy percent	50
Maximum percent	200

*Required



Service : simple-web

Cluster test-cluster

Status ACTIVE

Task definition simple-web:2

Launch type EC2

Desired count 1

Pending count 0

Running count 1

Task Placement

Strategy spread(attribute:ecs.availability-zone), spread(instanceId)

Constraint No constraints

Service Deployment Options

Minimum healthy percent 50

Maximum percent 200

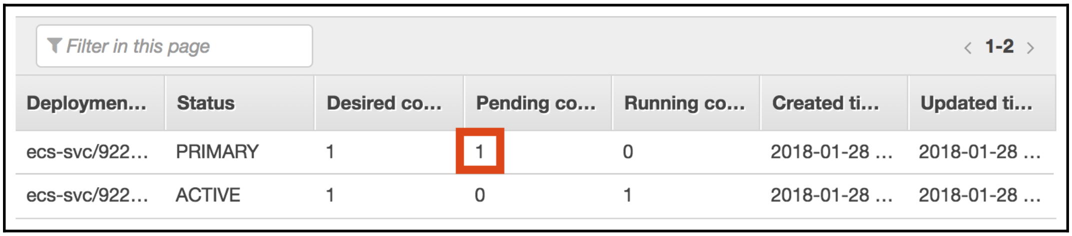
create pipeline | view pipelines

Click this button to refresh deployment status

Last updated on January 28, 2018 10:44:05 PM (0m ago)

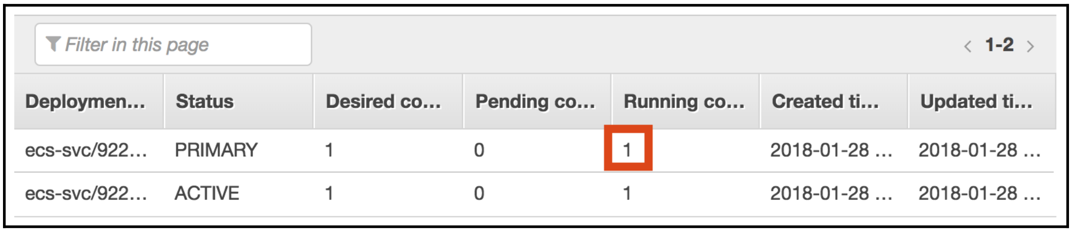
Filter in this page 1-2

Deploymen...	Status	Desired co...	Pending co...	Running co...	Created ti...	Updated ti...
ecs-svc/922...	PRIMARY	1	0	0	2018-01-28 ...	2018-01-28 ...
ecs-svc/922...	ACTIVE	1	0	1	2018-01-28 ...	2018-01-28 ...



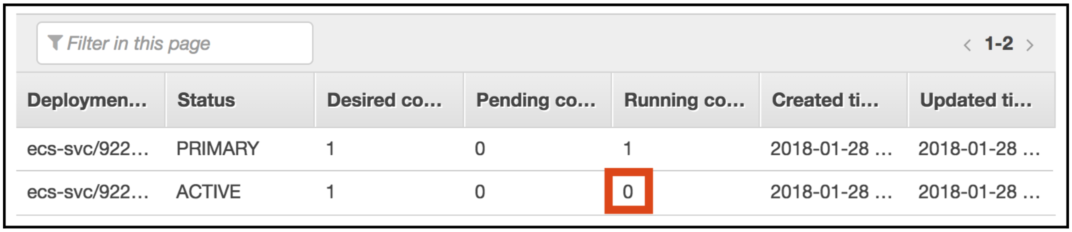
Filter in this page 1-2

Deploymen...	Status	Desired co...	Pending co...	Running co...	Created ti...	Updated ti...
ecs-svc/922...	PRIMARY	1	1	0	2018-01-28 ...	2018-01-28 ...
ecs-svc/922...	ACTIVE	1	0	1	2018-01-28 ...	2018-01-28 ...

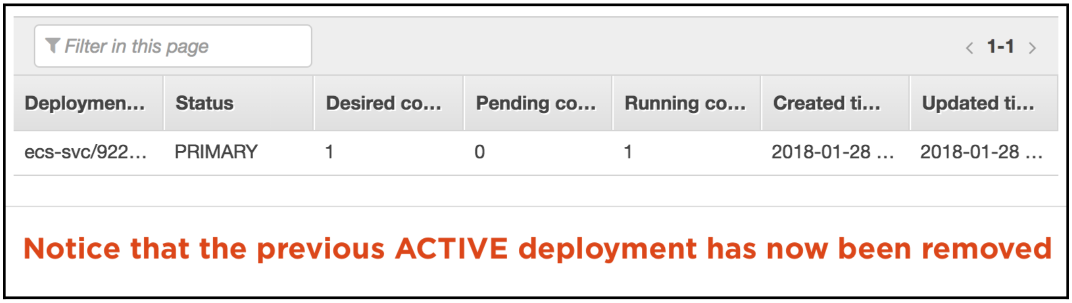


Filter in this page 1-2

Deploymen...	Status	Desired co...	Pending co...	Running co...	Created ti...	Updated ti...
ecs-svc/922...	PRIMARY	1	0	1	2018-01-28 ...	2018-01-28 ...
ecs-svc/922...	ACTIVE	1	0	1	2018-01-28 ...	2018-01-28 ...

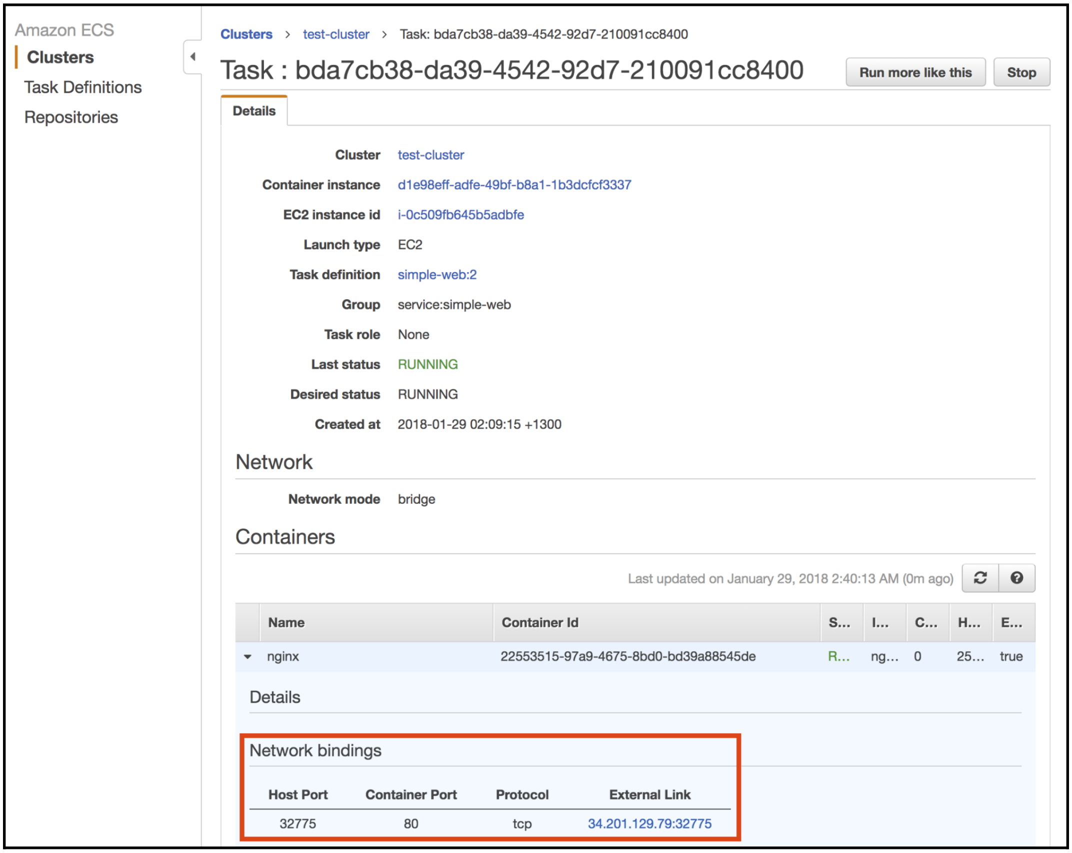


Deploymen...	Status	Desired co...	Pending co...	Running co...	Created ti...	Updated ti...
ecs-svc/922...	PRIMARY	1	0	1	2018-01-28 ...	2018-01-28 ...
ecs-svc/922...	ACTIVE	1	0	0	2018-01-28 ...	2018-01-28 ...



Deploymen...	Status	Desired co...	Pending co...	Running co...	Created ti...	Updated ti...
ecs-svc/922...	PRIMARY	1	0	1	2018-01-28 ...	2018-01-28 ...

Notice that the previous ACTIVE deployment has now been removed



Task : bda7cb38-da39-4542-92d7-210091cc8400

Cluster	test-cluster
Container instance	d1e98eff-adfe-49bf-b8a1-1b3dcfcf3337
EC2 instance id	i-0c509fb645b5adbfe
Launch type	EC2
Task definition	simple-web:2
Group	service:simple-web
Task role	None
Last status	RUNNING
Desired status	RUNNING
Created at	2018-01-29 02:09:15 +1300

Network

Network mode bridge

Containers

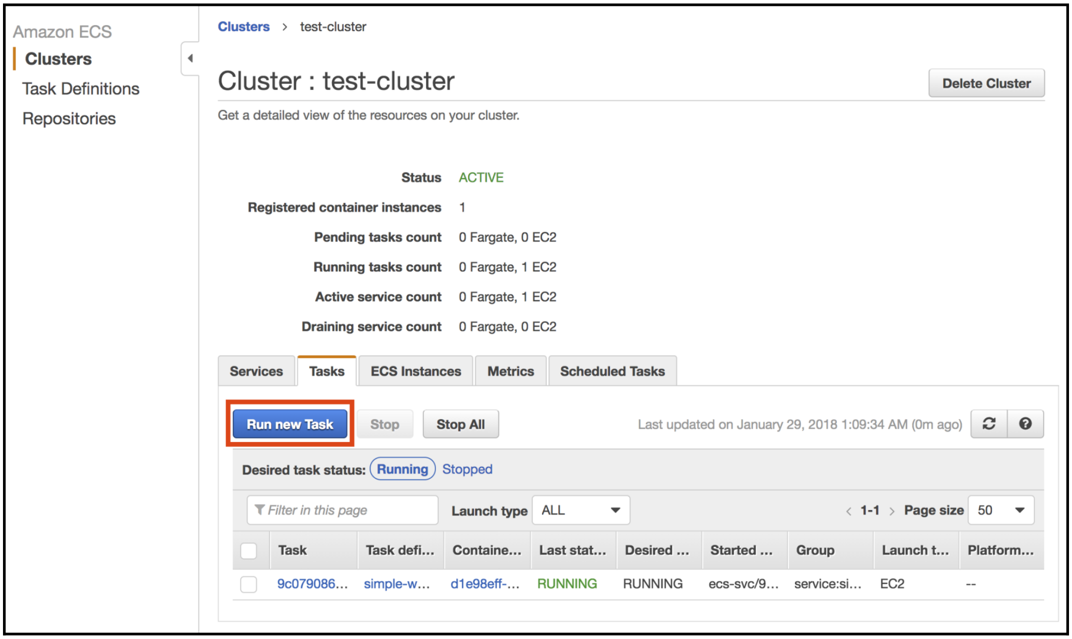
Last updated on January 29, 2018 2:40:13 AM (0m ago)

Name	Container Id	S...	I...	C...	H...	E...
nginx	22553515-97a9-4675-8bd0-bd39a88545de	R...	ng...	0	25...	true

Details

Network bindings

Host Port	Container Port	Protocol	External Link
32775	80	tcp	34.201.129.79:32775



Cluster : test-cluster

Get a detailed view of the resources on your cluster.

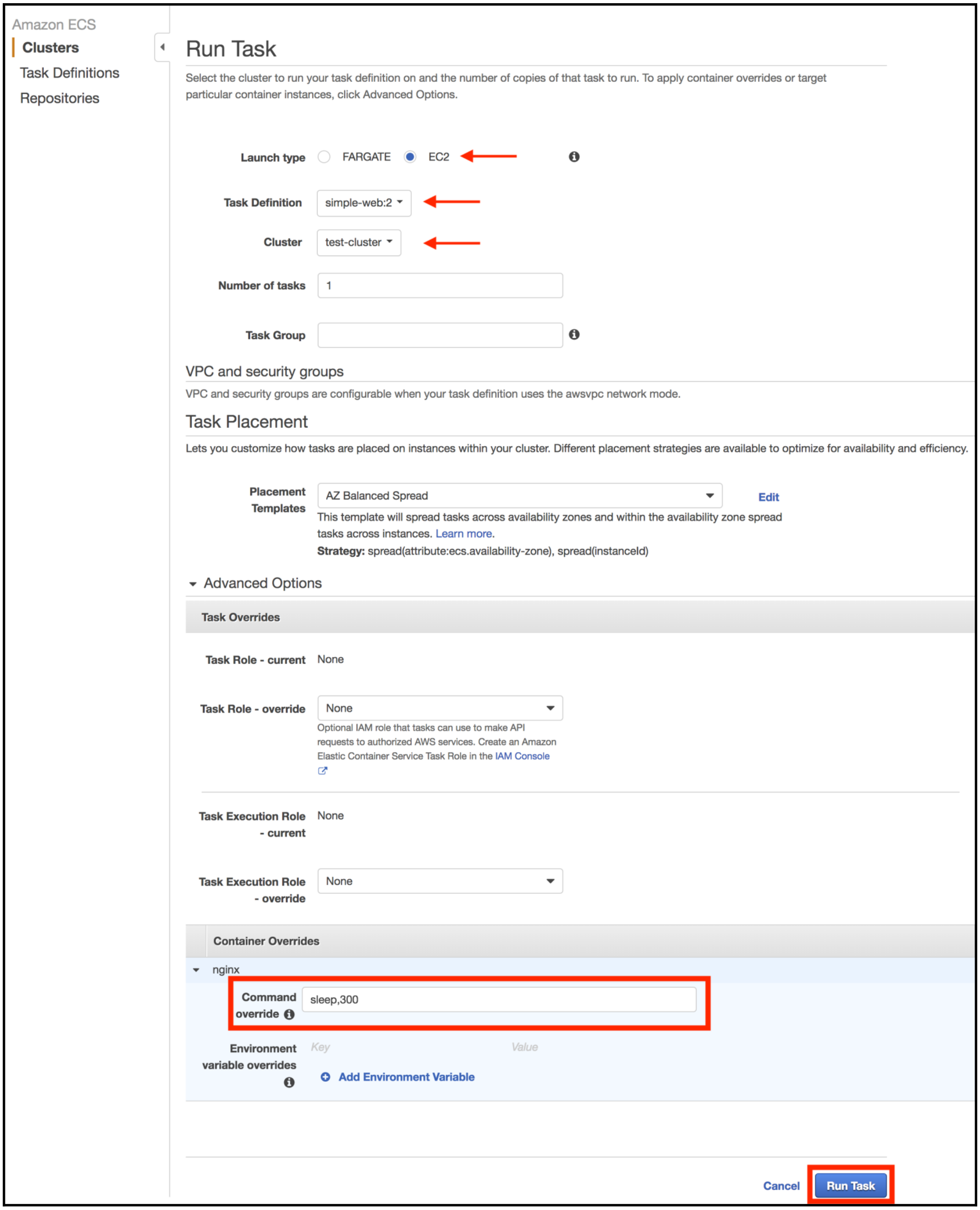
Status	ACTIVE
Registered container instances	1
Pending tasks count	0 Fargate, 0 EC2
Running tasks count	0 Fargate, 1 EC2
Active service count	0 Fargate, 1 EC2
Draining service count	0 Fargate, 0 EC2

Last updated on January 29, 2018 1:09:34 AM (0m ago)

Desired task status: Running Stopped

Filter in this page **Launch type** ALL ‹ **1-1** › **Page size** 50

□	Task	Task defi...	Containe...	Last stat...	Desired ...	Started ...	Group	Launch t...	Platform...
□	9c079086...	simple-w...	d1e98eff-...	RUNNING	RUNNING	ecs-svc/9...	service:si...	EC2	--



Run Task

Select the cluster to run your task definition on and the number of copies of that task to run. To apply container overrides or target particular container instances, click Advanced Options.

Launch type ○ FARGATE ● EC2

Task Definition: simple-web:2

Cluster: test-cluster

Number of tasks: 1

Task Group:

VPC and security groups

VPC and security groups are configurable when your task definition uses the awsvpc network mode.

Task Placement

Lets you customize how tasks are placed on instances within your cluster. Different placement strategies are available to optimize for availability and efficiency.

Placement Templates: AZ Balanced Spread — Edit

This template will spread tasks across availability zones and within the availability zone spread tasks across instances. Learn more.

Strategy: spread(attribute:ecs.availability-zone), spread(instanceId)

Advanced Options

Task Overrides

Task Role - current: None

Task Role - override: None

Optional IAM role that tasks can use to make API requests to authorized AWS services. Create an Amazon Elastic Container Service Task Role in the IAM Console

Task Execution Role - current: None

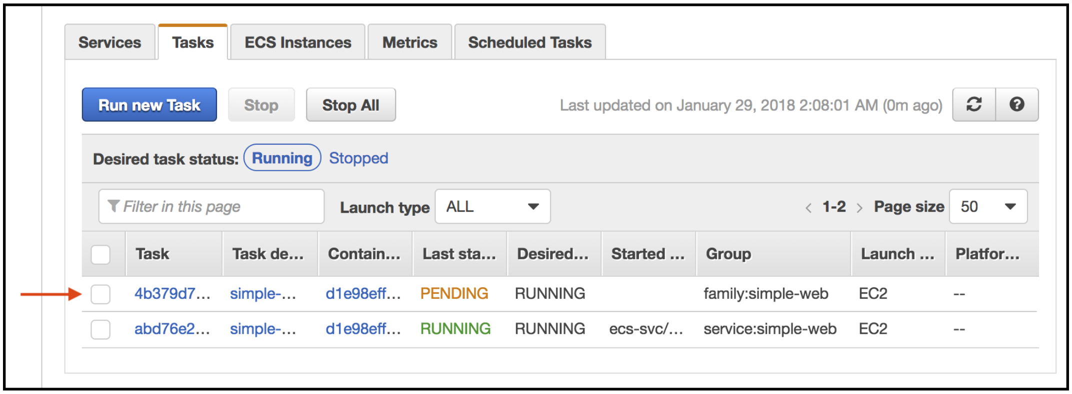
Task Execution Role - override: None

Container Overrides

nginx

Command override: sleep,300

Environment variable overrides: Key Value



Last updated on January 29, 2018 2:08:01 AM (0m ago)

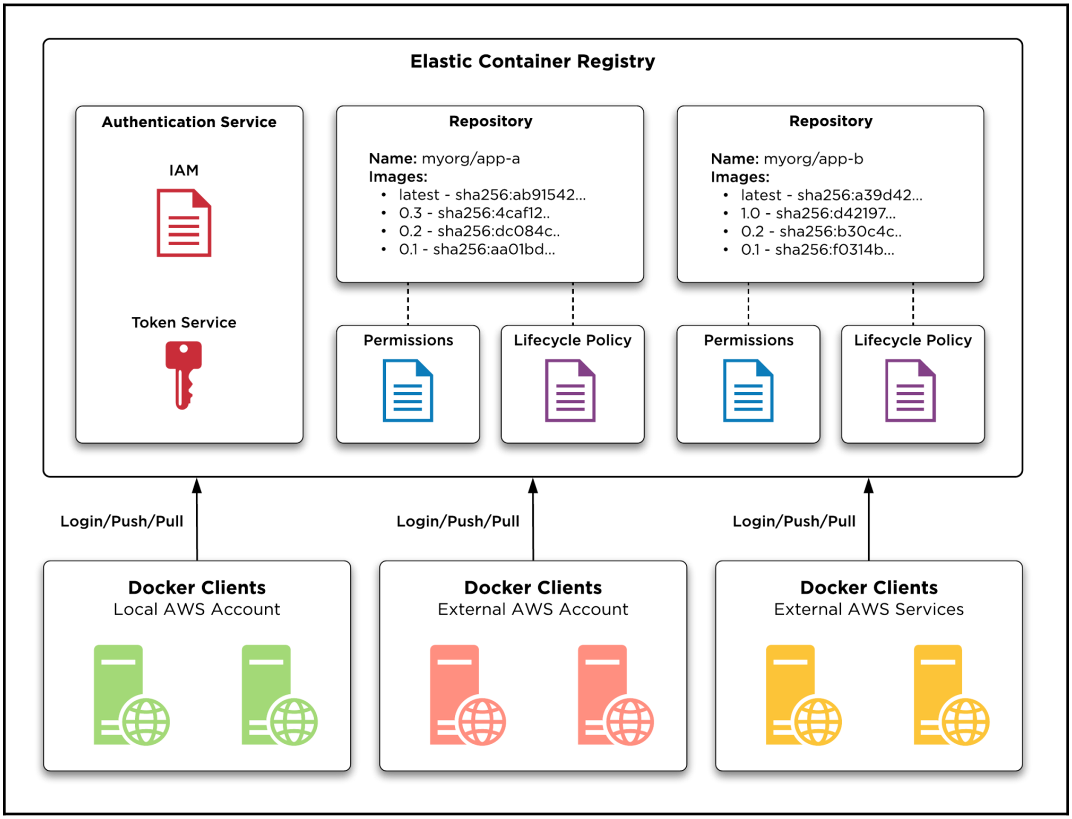
Desired task status: Running Stopped

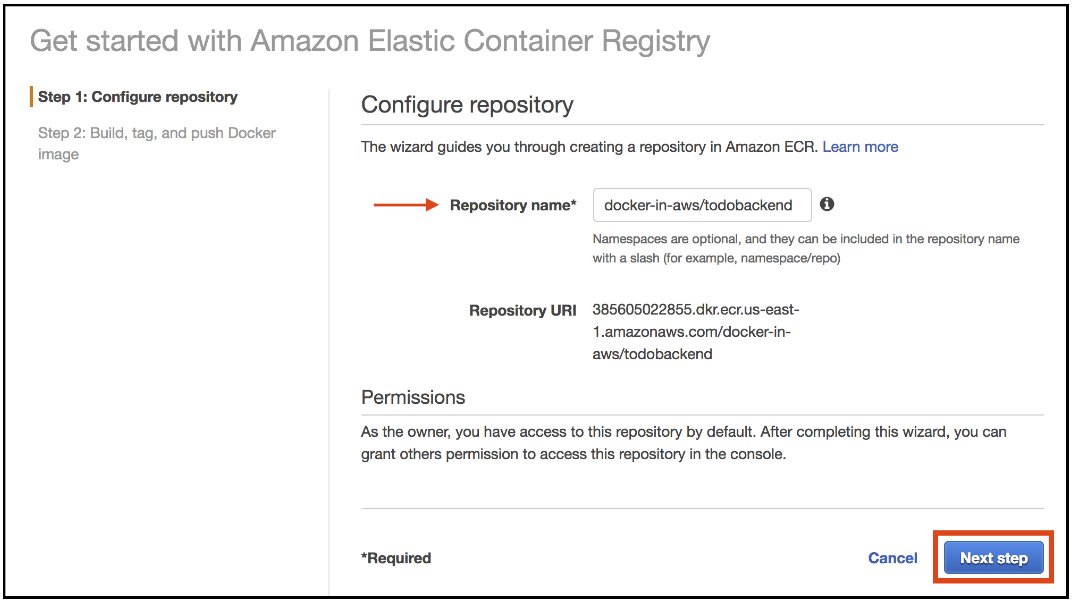
Launch type ALL

Page size 50

□	Task	Task de…	Contain…	Last sta…	Desired…	Started …	Group	Launch …	Platfor…
□	4b379d7…	simple-…	d1e98eff…	PENDING	RUNNING		family:simple-web	EC2	--
□	abd76e2…	simple-…	d1e98eff…	RUNNING	RUNNING	ecs-svc/…	service:simple-web	EC2	--

Chapter 5: Publishing Docker Images Using ECR





Get started with Amazon Elastic Container Registry

Step 1: Configure repository
Step 2: Build, tag, and push Docker image

Configure repository

The wizard guides you through creating a repository in Amazon ECR. Learn more

Repository name* docker-in-aws/todobackend

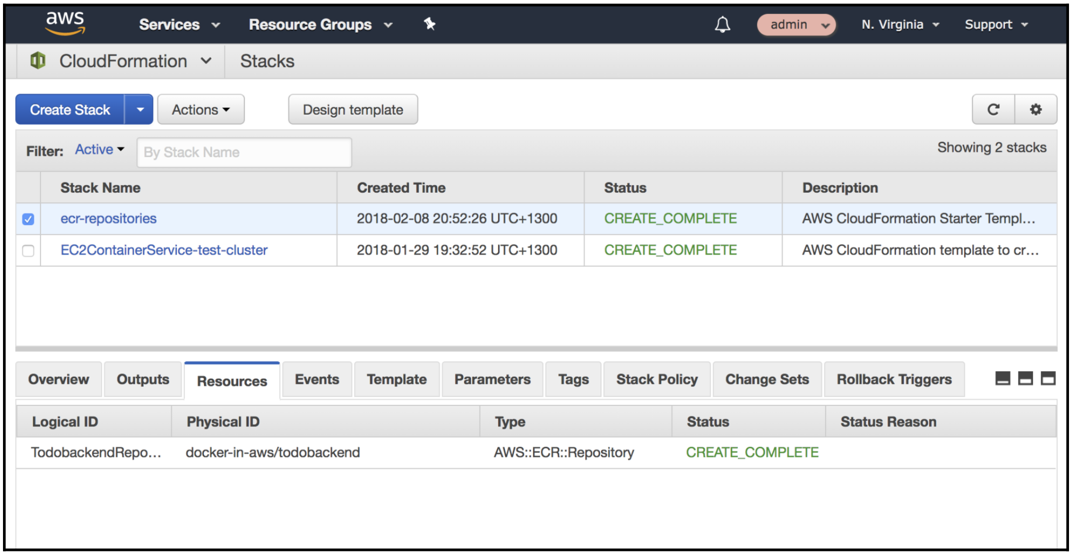
Namespaces are optional, and they can be included in the repository name with a slash (for example, namespace/repo)

Repository URI 385605022855.dkr.ecr.us-east-1.amazonaws.com/docker-in-aws/todobackend

Permissions

As the owner, you have access to this repository by default. After completing this wizard, you can grant others permission to access this repository in the console.

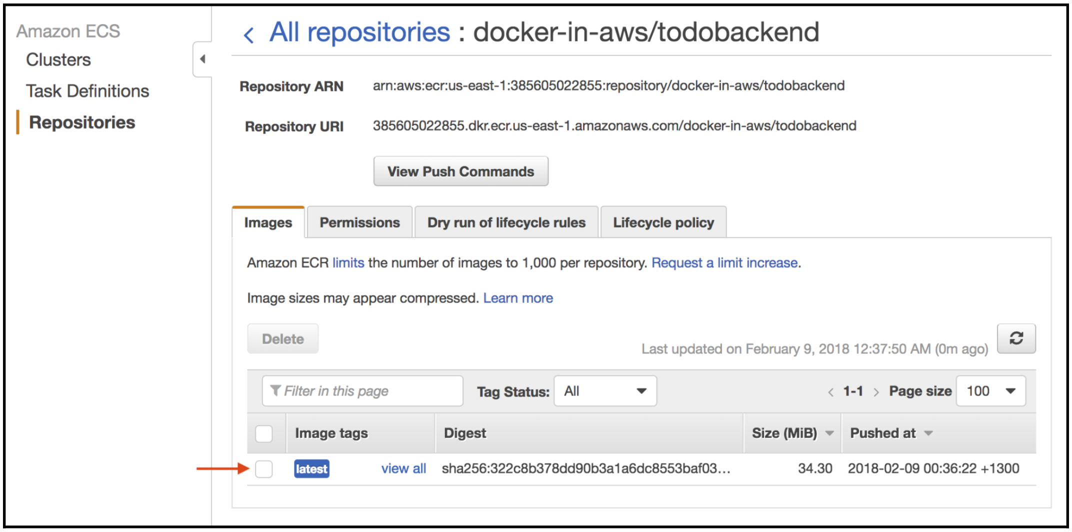
*Required



Showing 2 stacks

	Stack Name	Created Time	Status	Description
☑	ecr-repositories	2018-02-08 20:52:26 UTC+1300	CREATE_COMPLETE	AWS CloudFormation Starter Templ...
□	EC2ContainerService-test-cluster	2018-01-29 19:32:52 UTC+1300	CREATE_COMPLETE	AWS CloudFormation template to cr...

Logical ID	Physical ID	Type	Status	Status Reason
TodobackendRepo...	docker-in-aws/todobackend	AWS::ECR::Repository	CREATE_COMPLETE	



Amazon ECS

Clusters

Task Definitions

Repositories

‹ All repositories : docker-in-aws/todobackend

Repository ARN arn:aws:ecr:us-east-1:385605022855:repository/docker-in-aws/todobackend

Repository URI 385605022855.dkr.ecr.us-east-1.amazonaws.com/docker-in-aws/todobackend

View Push Commands

Images | Permissions | Dry run of lifecycle rules | Lifecycle policy

Amazon ECR limits the number of images to 1,000 per repository. Request a limit increase.

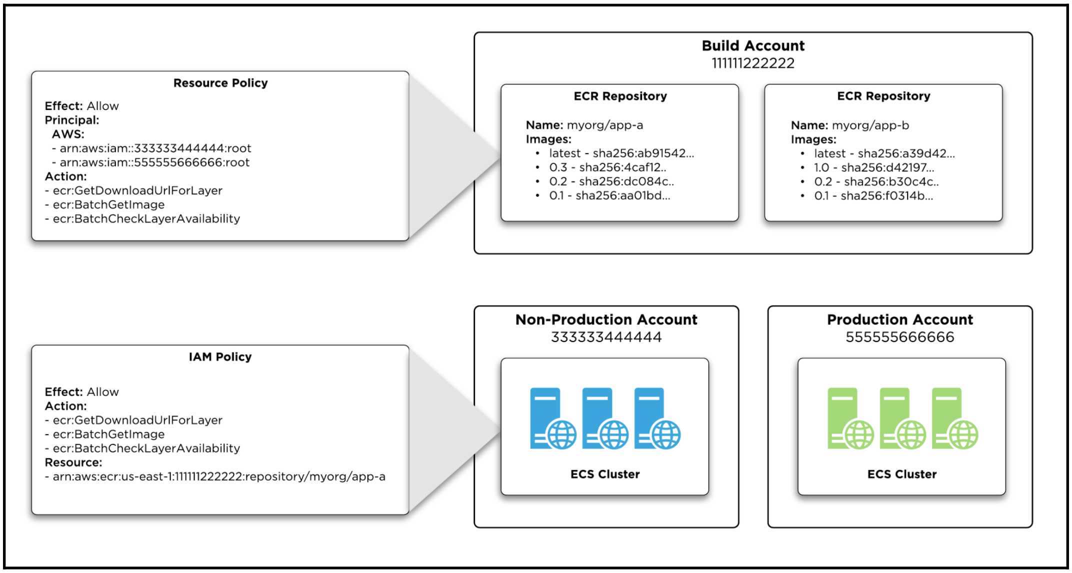
Image sizes may appear compressed. Learn more

Delete

Last updated on February 9, 2018 12:37:50 AM (0m ago)

Filter in this page   **Tag Status:** All   ‹ 1-1 › **Page size** 100

□	Image tags		Digest	Size (MiB)	Pushed at
□	latest	view all	sha256:322c8b378dd90b3a1a6dc8553baf03...	34.30	2018-02-09 00:36:22 +1300



Resource Policy

Effect: Allow
Principal:
AWS:
- arn:aws:iam::333333444444:root
- arn:aws:iam::555555666666:root
Action:
- ecr:GetDownloadUrlForLayer
- ecr:BatchGetImage
- ecr:BatchCheckLayerAvailability

Build Account
111111222222

ECR Repository

Name: myorg/app-a
Images:
- latest - sha256:ab91542...
- 0.3 - sha256:4caf12..
- 0.2 - sha256:dc084c..
- 0.1 - sha256:aa01bd...

ECR Repository

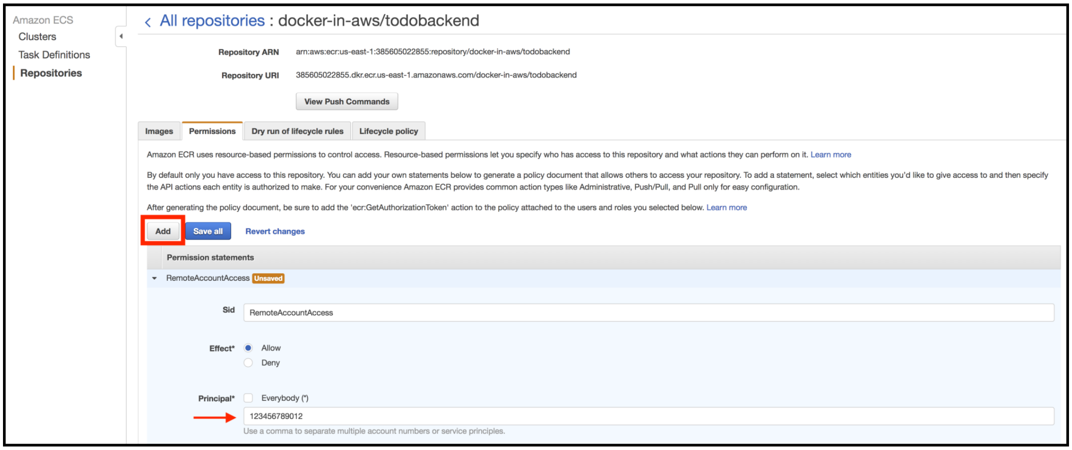
Name: myorg/app-b
Images:
- latest - sha256:a39d42...
- 1.0 - sha256:d42197...
- 0.2 - sha256:b30c4c..
- 0.1 - sha256:f0314b...

IAM Policy

Effect: Allow
Action:
- ecr:GetDownloadUrlForLayer
- ecr:BatchGetImage
- ecr:BatchCheckLayerAvailability
Resource:
- arn:aws:ecr:us-east-1:111111222222:repository/myorg/app-a

Non-Production Account
333333444444

Production Account
555555666666



All repositories : docker-in-aws/todobackend

Repository ARN arn:aws:ecr:us-east-1:385605022855:repository/docker-in-aws/todobackend

Repository URI 385605022855.dkr.ecr.us-east-1.amazonaws.com/docker-in-aws/todobackend

Amazon ECR uses resource-based permissions to control access. Resource-based permissions let you specify who has access to this repository and what actions they can perform on it. Learn more

By default only you have access to this repository. You can add your own statements below to generate a policy document that allows others to access your repository. To add a statement, select which entities you'd like to give access to and then specify the API actions each entity is authorized to make. For your convenience Amazon ECR provides common action types like Administrative, Push/Pull, and Pull only for easy configuration.

After generating the policy document, be sure to add the 'ecr:GetAuthorizationToken' action to the policy attached to the users and roles you selected below. Learn more

RemoteAccountAccess Unsaved

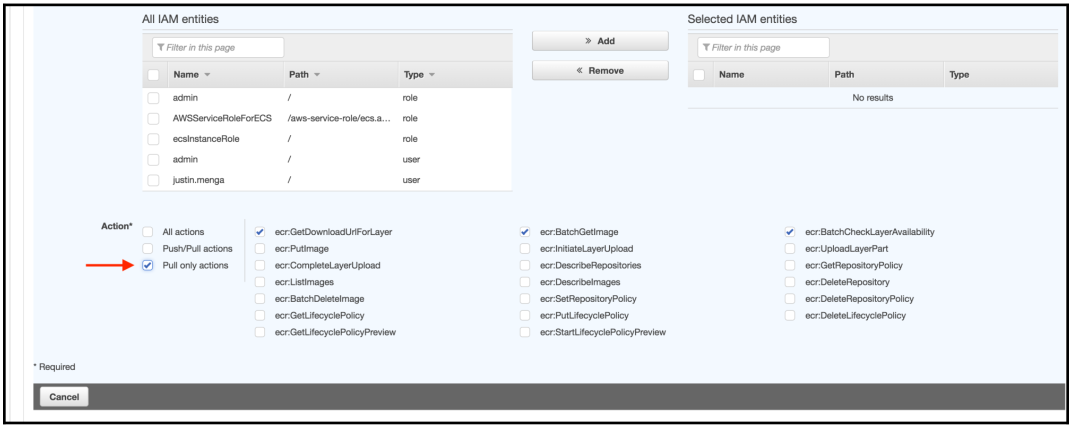
Sid RemoteAccountAccess

Effect* ● Allow ○ Deny

Principal* □ Everybody (*)

123456789012

Use a comma to separate multiple account numbers or service principles.



All IAM entities

□	Name	Path	Type
□	admin	/	role
□	AWSServiceRoleForECS	/aws-service-role/ecs.a...	role
□	ecsInstanceRole	/	role
□	admin	/	user
□	justin.menga	/	user

Selected IAM entities

□	Name	Path	Type
	No results		

Action*

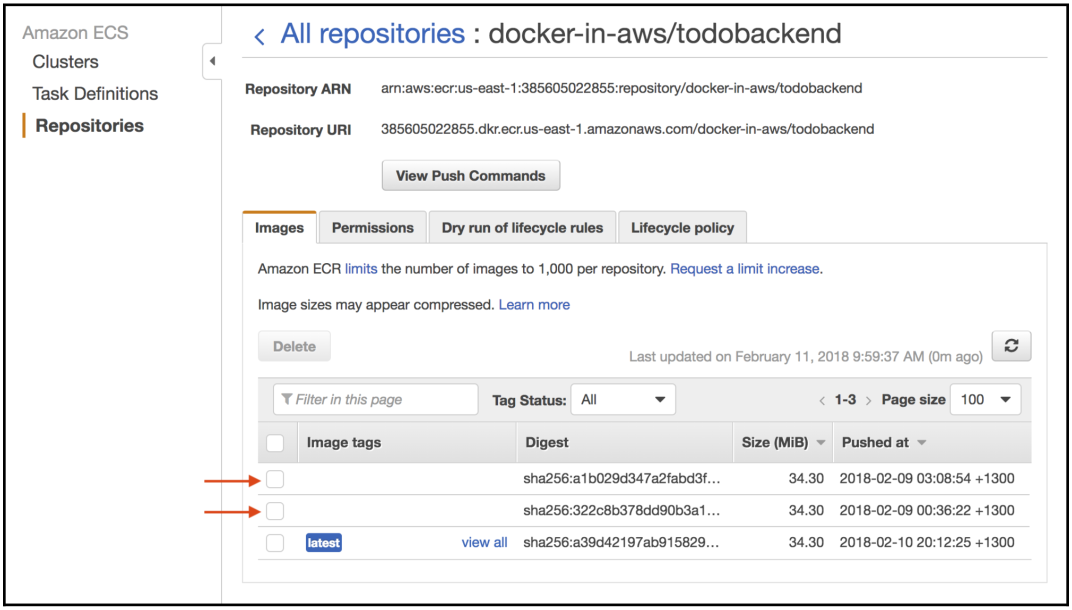
□ All actions
□ Push/Pull actions
☑ Pull only actions

☑ ecr:GetDownloadUrlForLayer
□ ecr:PutImage
□ ecr:CompleteLayerUpload
□ ecr:ListImages
□ ecr:BatchDeleteImage
□ ecr:GetLifecyclePolicy
□ ecr:GetLifecyclePolicyPreview

☑ ecr:BatchGetImage
□ ecr:InitiateLayerUpload
□ ecr:DescribeRepositories
□ ecr:DescribeImages
□ ecr:SetRepositoryPolicy
□ ecr:PutLifecyclePolicy
□ ecr:StartLifecyclePolicyPreview

☑ ecr:BatchCheckLayerAvailability
□ ecr:UploadLayerPart
□ ecr:GetRepositoryPolicy
□ ecr:DeleteRepository
□ ecr:DeleteRepositoryPolicy
□ ecr:DeleteLifecyclePolicy

* Required



All repositories : docker-in-aws/todobackend

Repository ARN arn:aws:ecr:us-east-1:385605022855:repository/docker-in-aws/todobackend

Repository URI 385605022855.dkr.ecr.us-east-1.amazonaws.com/docker-in-aws/todobackend

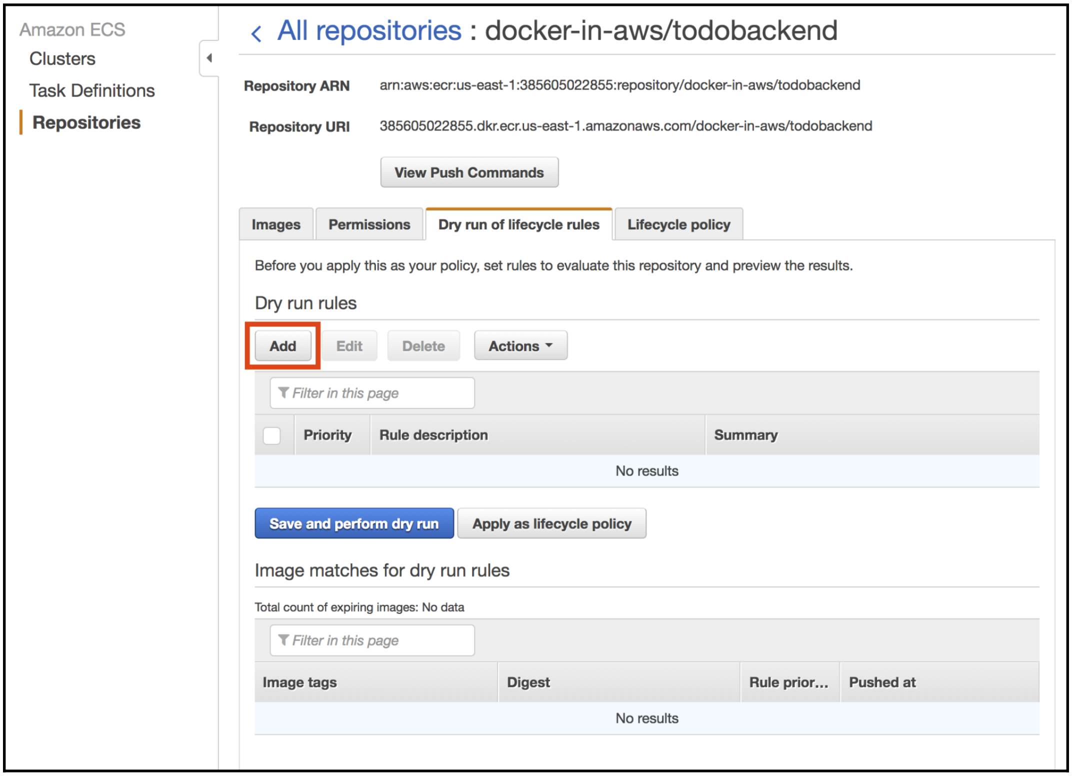
Amazon ECR limits the number of images to 1,000 per repository. Request a limit increase.

Image sizes may appear compressed. Learn more

Last updated on February 11, 2018 9:59:37 AM (0m ago)

Filter in this page Tag Status: All 1-3 Page size 100

□	Image tags	Digest	Size (MiB)	Pushed at
□		sha256:a1b029d347a2fabd3f…	34.30	2018-02-09 03:08:54 +1300
□		sha256:322c8b378dd90b3a1…	34.30	2018-02-09 00:36:22 +1300
□	latest view all	sha256:a39d42197ab915829…	34.30	2018-02-10 20:12:25 +1300



All repositories : docker-in-aws/todobackend

Repository ARN arn:aws:ecr:us-east-1:385605022855:repository/docker-in-aws/todobackend

Repository URI 385605022855.dkr.ecr.us-east-1.amazonaws.com/docker-in-aws/todobackend

Before you apply this as your policy, set rules to evaluate this repository and preview the results.

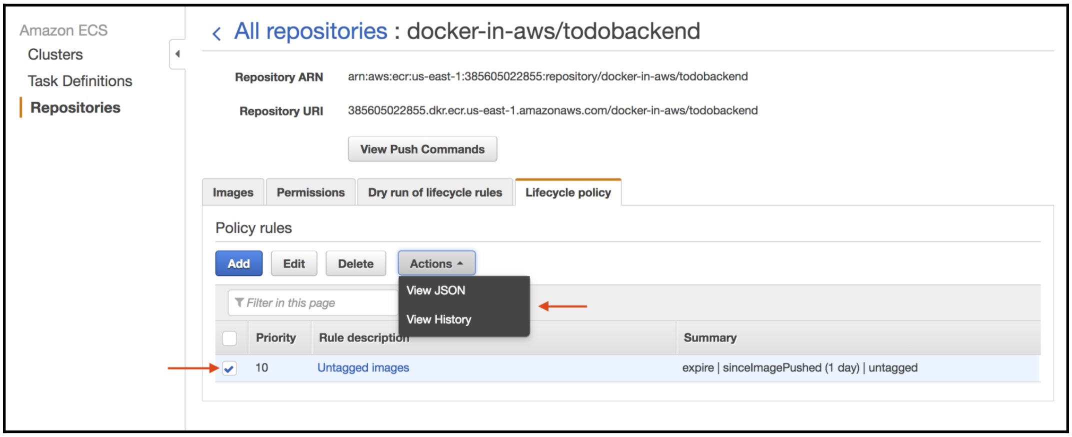
Dry run rules

□	Priority	Rule description	Summary
		No results	

Image matches for dry run rules

Total count of expiring images: No data

Image tags	Digest	Rule prior...	Pushed at
	No results		



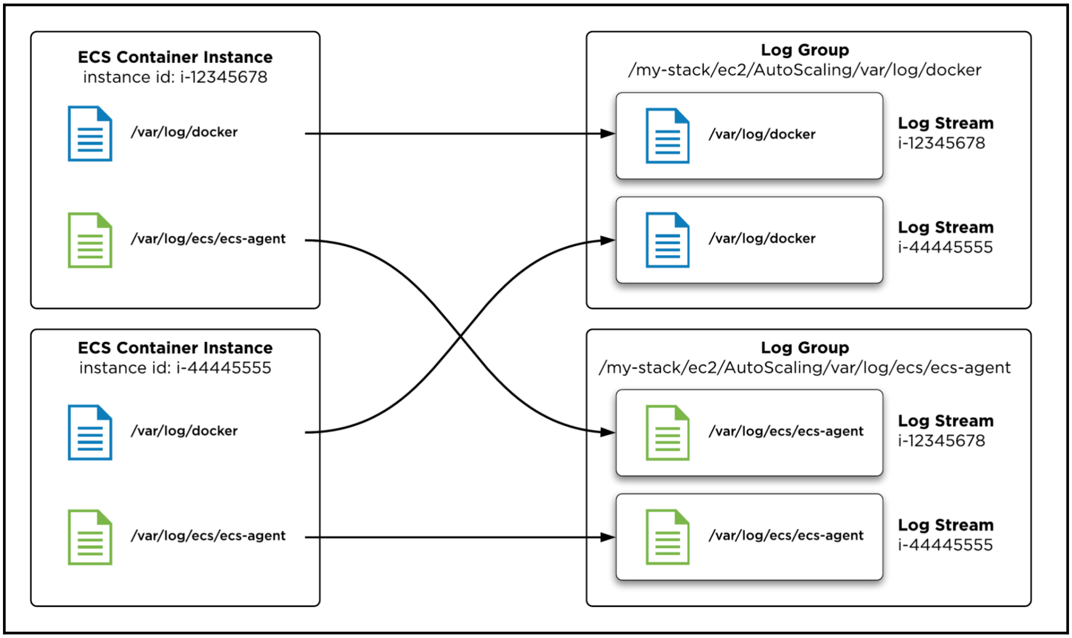
All repositories : docker-in-aws/todobackend

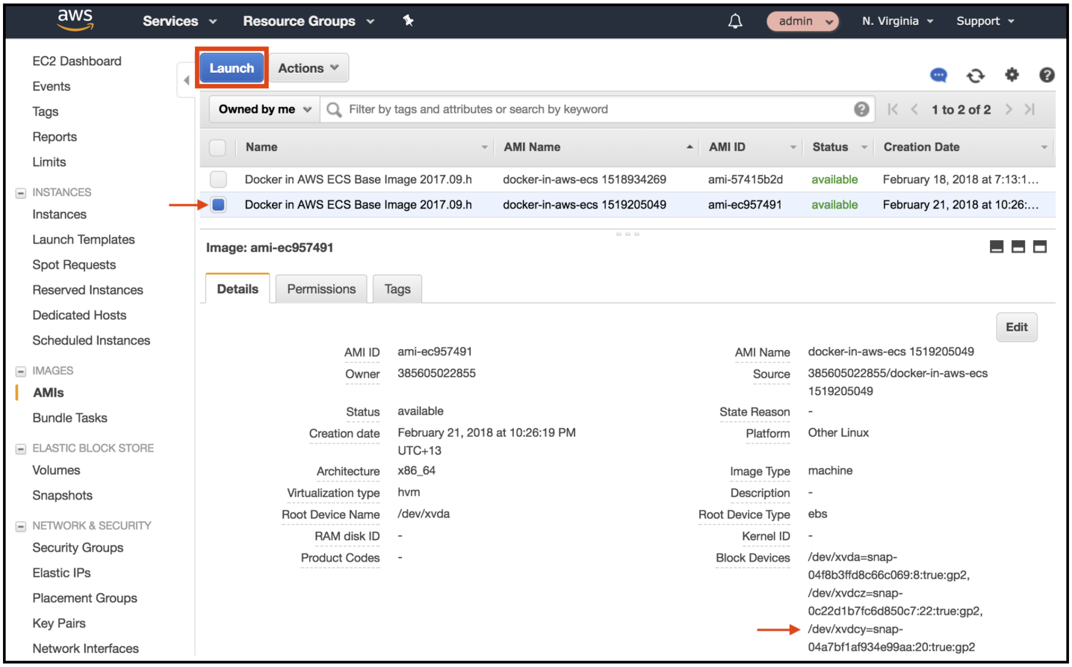
Repository ARN arn:aws:ecr:us-east-1:385605022855:repository/docker-in-aws/todobackend

Repository URI 385605022855.dkr.ecr.us-east-1.amazonaws.com/docker-in-aws/todobackend

Policy rules

□	Priority	Rule description	Summary
☑	10	Untagged images	expire | sinceImagePushed (1 day) | untagged


ECS Container Instance
instance id: i-12345678
/var/log/docker
/var/log/ecs/ecs-agent
ECS Container Instance
instance id: i-44445555
/var/log/docker
/var/log/ecs/ecs-agent
Log Group
/my-stack/ec2/AutoScaling/var/log/docker
/var/log/docker
Log Stream
i-12345678
/var/log/docker
Log Stream
i-44445555
Log Group
/my-stack/ec2/AutoScaling/var/log/ecs/ecs-agent
/var/log/ecs/ecs-agent
Log Stream
i-12345678
/var/log/ecs/ecs-agent
Log Stream
i-44445555



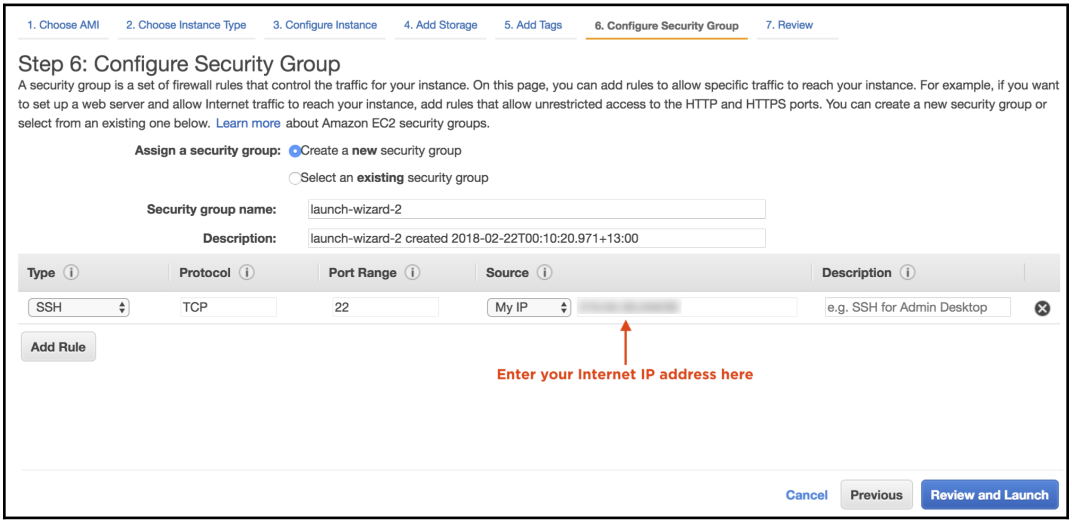
	Name	AMI Name	AMI ID	Status	Creation Date
□	Docker in AWS ECS Base Image 2017.09.h	docker-in-aws-ecs 1518934269	ami-57415b2d	available	February 18, 2018 at 7:13:1…
■	Docker in AWS ECS Base Image 2017.09.h	docker-in-aws-ecs 1519205049	ami-ec957491	available	February 21, 2018 at 10:26:…

Image: ami-ec957491

Details | Permissions | Tags

Edit

AMI ID	ami-ec957491	AMI Name	docker-in-aws-ecs 1519205049
Owner	385605022855	Source	385605022855/docker-in-aws-ecs 1519205049
Status	available	State Reason	-
Creation date	February 21, 2018 at 10:26:19 PM UTC+13	Platform	Other Linux
Architecture	x86_64	Image Type	machine
Virtualization type	hvm	Description	-
Root Device Name	/dev/xvda	Root Device Type	ebs
RAM disk ID	-	Kernel ID	-
Product Codes	-	Block Devices	/dev/xvda=snap-04f8b3ffd8c66c069:8:true:gp2, /dev/xvdcz=snap-0c22d1b7fc6d850c7:22:true:gp2, /dev/xvdcy=snap-04a7bf1af934e99aa:20:true:gp2



Step 6: Configure Security Group

A security group is a set of firewall rules that control the traffic for your instance. On this page, you can add rules to allow specific traffic to reach your instance. For example, if you want to set up a web server and allow Internet traffic to reach your instance, add rules that allow unrestricted access to the HTTP and HTTPS ports. You can create a new security group or select from an existing one below. Learn more about Amazon EC2 security groups.

Assign a security group: ● Create a **new** security group

○ Select an **existing** security group

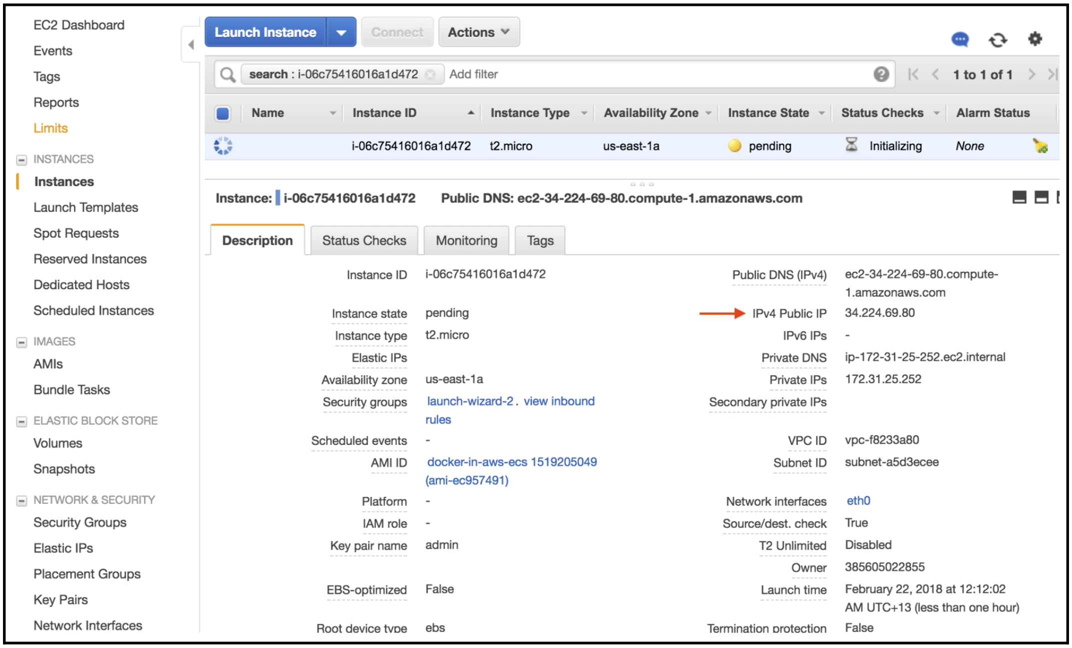
Security group name: launch-wizard-2

Description: launch-wizard-2 created 2018-02-22T00:10:20.971+13:00

Type	Protocol	Port Range	Source	Description
SSH	TCP	22	My IP [redacted]	e.g. SSH for Admin Desktop

Add Rule

Enter your Internet IP address here

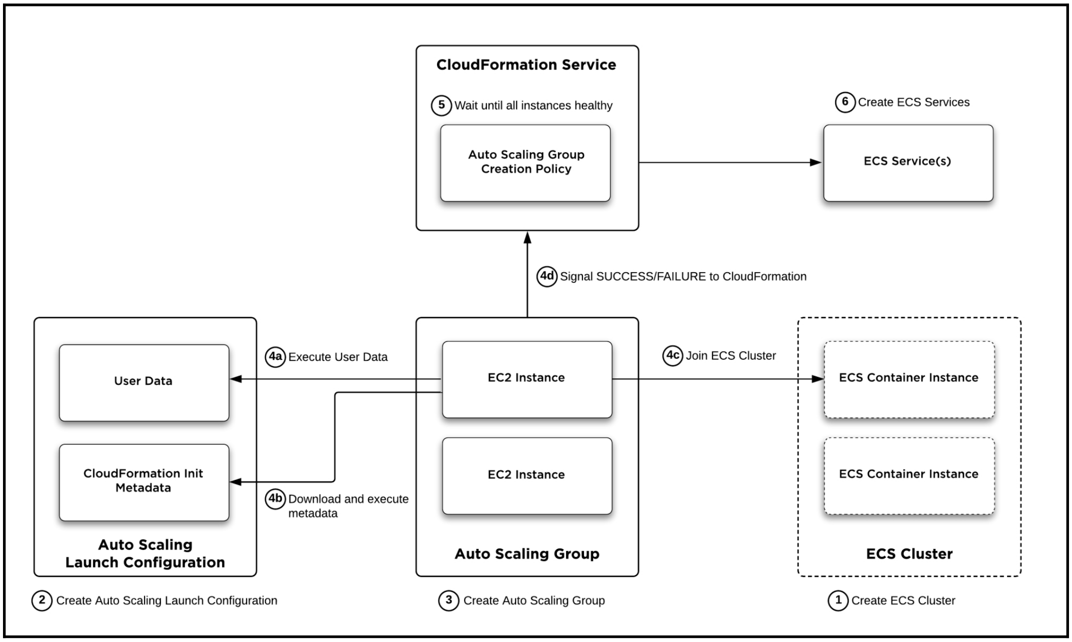


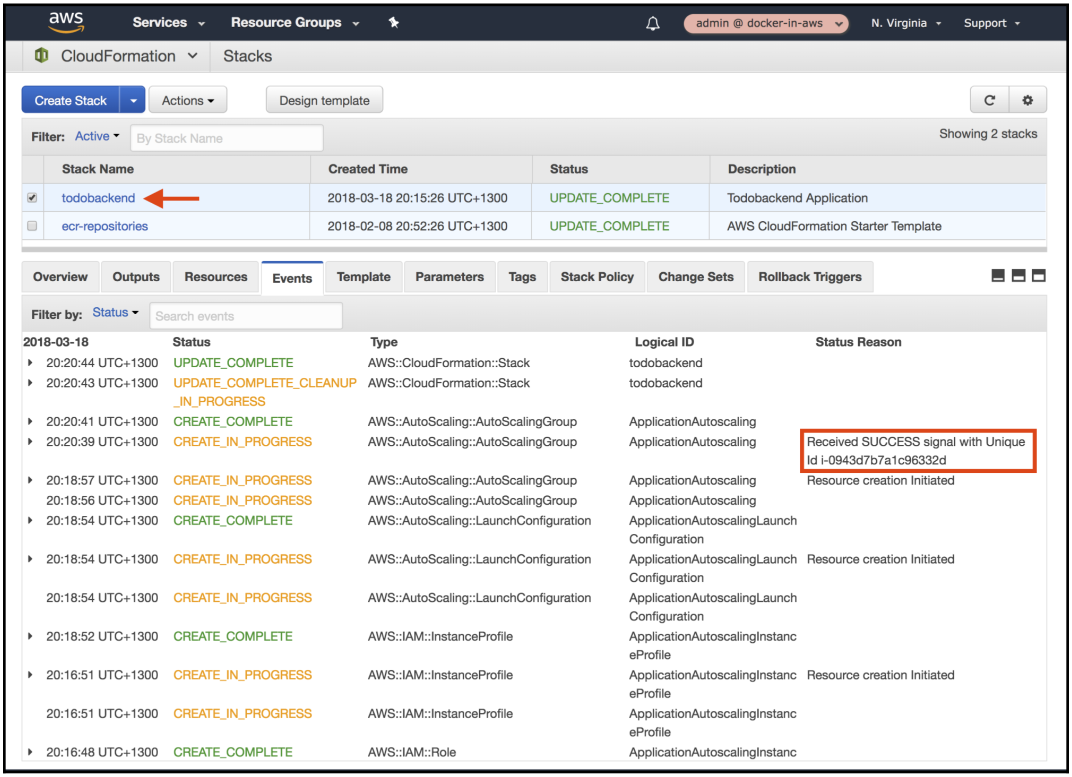
Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks	Alarm Status
	i-06c75416016a1d472	t2.micro	us-east-1a	pending	Initializing	*None*

Instance: i-06c75416016a1d472 Public DNS: ec2-34-224-69-80.compute-1.amazonaws.com

Instance ID	i-06c75416016a1d472	Public DNS (IPv4)	ec2-34-224-69-80.compute-1.amazonaws.com
Instance state	pending	IPv4 Public IP	34.224.69.80
Instance type	t2.micro	IPv6 IPs	-
Elastic IPs		Private DNS	ip-172-31-25-252.ec2.internal
Availability zone	us-east-1a	Private IPs	172.31.25.252
Security groups	launch-wizard-2 . view inbound rules	Secondary private IPs	
Scheduled events	-	VPC ID	vpc-f8233a80
AMI ID	docker-in-aws-ecs 1519205049 (ami-ec957491)	Subnet ID	subnet-a5d3ecee
Platform	-	Network interfaces	eth0
IAM role	-	Source/dest. check	True
Key pair name	admin	T2 Unlimited	Disabled
		Owner	385605022855
EBS-optimized	False	Launch time	February 22, 2018 at 12:12:02 AM UTC+13 (less than one hour)
Root device type	ebs	Termination protection	False

Chapter 7: Creating ECS Clusters


CloudFormation Service
5 Wait until all instances healthy
Auto Scaling Group Creation Policy
6 Create ECS Services
ECS Service(s)
4d Signal SUCCESS/FAILURE to CloudFormation
User Data
4a Execute User Data
EC2 Instance
4c Join ECS Cluster
ECS Container Instance
CloudFormation Init Metadata
EC2 Instance
ECS Container Instance
4b Download and execute metadata
Auto Scaling Launch Configuration
Auto Scaling Group
ECS Cluster
2 Create Auto Scaling Launch Configuration
3 Create Auto Scaling Group
1 Create ECS Cluster



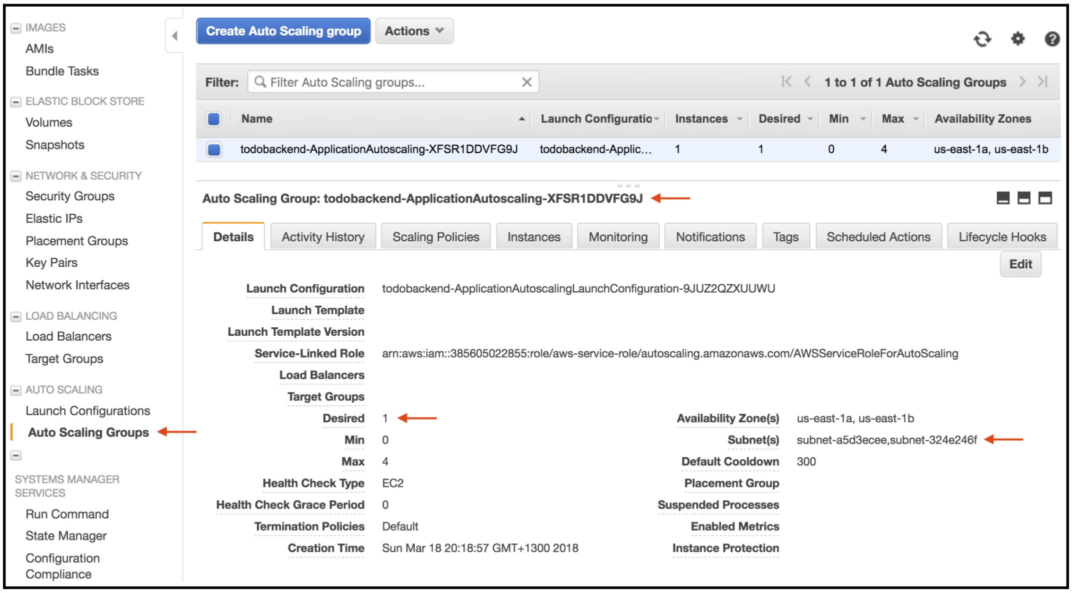
Filter: Active ▾ By Stack Name

Showing 2 stacks

	Stack Name	Created Time	Status	Description
☑	todobackend	2018-03-18 20:15:26 UTC+1300	UPDATE_COMPLETE	Todobackend Application
□	ecr-repositories	2018-02-08 20:52:26 UTC+1300	UPDATE_COMPLETE	AWS CloudFormation Starter Template

Filter by: Status ▾ Search events

2018-03-18	Status	Type	Logical ID	Status Reason
20:20:44 UTC+1300	UPDATE_COMPLETE	AWS::CloudFormation::Stack	todobackend	
20:20:43 UTC+1300	UPDATE_COMPLETE_CLEANUP_IN_PROGRESS	AWS::CloudFormation::Stack	todobackend	
20:20:41 UTC+1300	CREATE_COMPLETE	AWS::AutoScaling::AutoScalingGroup	ApplicationAutoscaling	
20:20:39 UTC+1300	CREATE_IN_PROGRESS	AWS::AutoScaling::AutoScalingGroup	ApplicationAutoscaling	Received SUCCESS signal with Unique Id i-0943d7b7a1c96332d
20:18:57 UTC+1300	CREATE_IN_PROGRESS	AWS::AutoScaling::AutoScalingGroup	ApplicationAutoscaling	Resource creation Initiated
20:18:56 UTC+1300	CREATE_IN_PROGRESS	AWS::AutoScaling::AutoScalingGroup	ApplicationAutoscaling	
20:18:54 UTC+1300	CREATE_COMPLETE	AWS::AutoScaling::LaunchConfiguration	ApplicationAutoscalingLaunchConfiguration	
20:18:54 UTC+1300	CREATE_IN_PROGRESS	AWS::AutoScaling::LaunchConfiguration	ApplicationAutoscalingLaunchConfiguration	Resource creation Initiated
20:18:54 UTC+1300	CREATE_IN_PROGRESS	AWS::AutoScaling::LaunchConfiguration	ApplicationAutoscalingLaunchConfiguration	
20:18:52 UTC+1300	CREATE_COMPLETE	AWS::IAM::InstanceProfile	ApplicationAutoscalingInstanceProfile	
20:16:51 UTC+1300	CREATE_IN_PROGRESS	AWS::IAM::InstanceProfile	ApplicationAutoscalingInstanceProfile	Resource creation Initiated
20:16:51 UTC+1300	CREATE_IN_PROGRESS	AWS::IAM::InstanceProfile	ApplicationAutoscalingInstanceProfile	
20:16:48 UTC+1300	CREATE_COMPLETE	AWS::IAM::Role	ApplicationAutoscalingInstanc	



Filter: Filter Auto Scaling groups...

1 to 1 of 1 Auto Scaling Groups

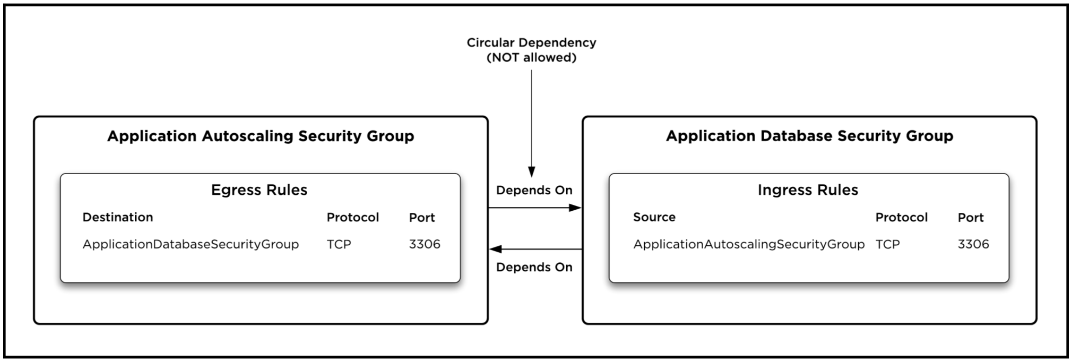
	Name	Launch Configuratio	Instances	Desired	Min	Max	Availability Zones
■	todobackend-ApplicationAutoscaling-XFSR1DDVFG9J	todobackend-Applic...	1	1	0	4	us-east-1a, us-east-1b

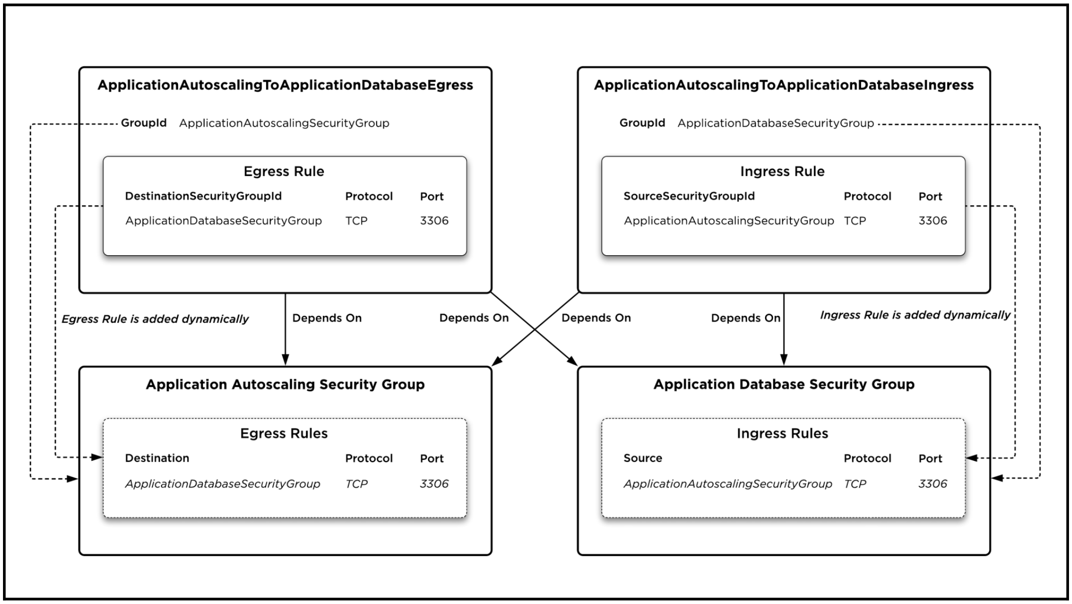
Auto Scaling Group: todobackend-ApplicationAutoscaling-XFSR1DDVFG9J

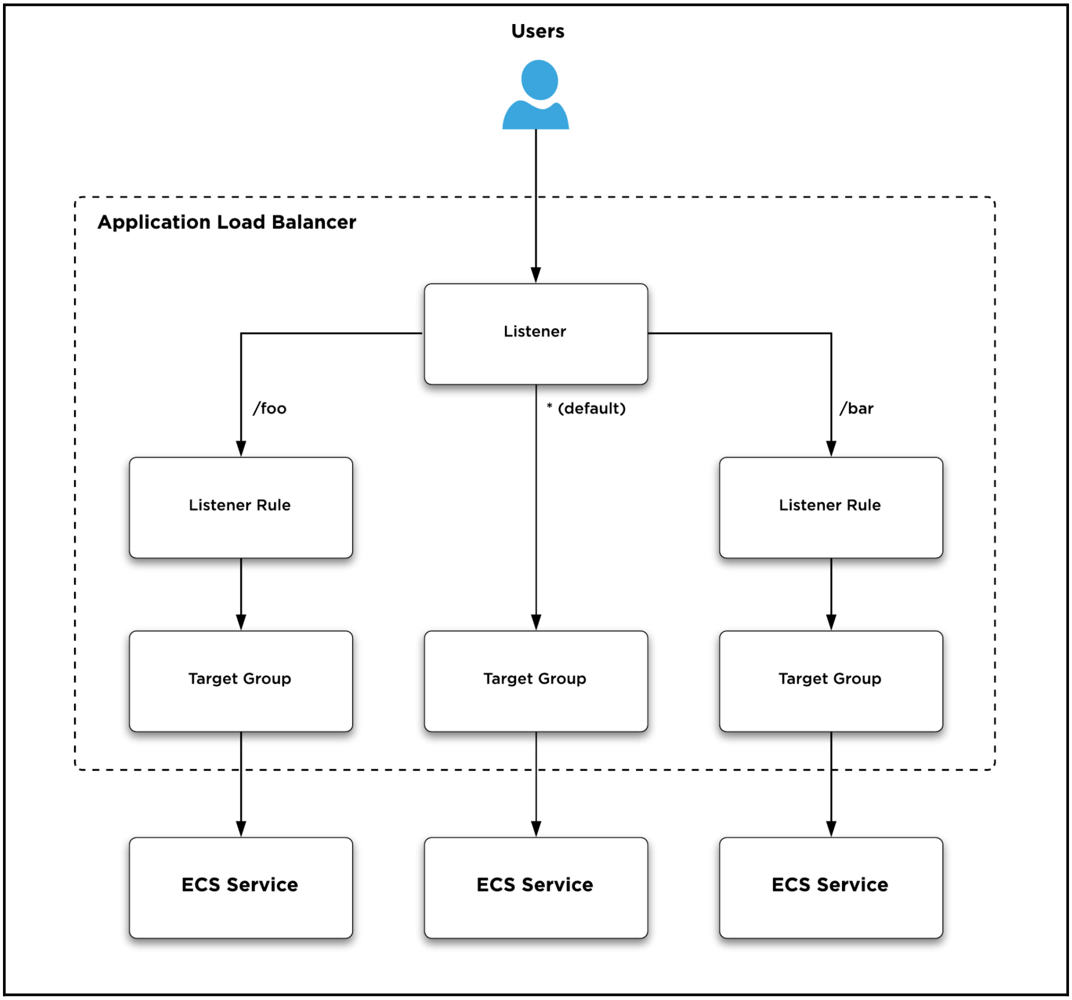
Launch Configuration todobackend-ApplicationAutoscalingLaunchConfiguration-9JUZ2QZXUUWU
Launch Template
Launch Template Version
Service-Linked Role arn:aws:iam::385605022855:role/aws-service-role/autoscaling.amazonaws.com/AWSServiceRoleForAutoScaling
Load Balancers
Target Groups
Desired 1
Min 0
Max 4
Health Check Type EC2
Health Check Grace Period 0
Termination Policies Default
Creation Time Sun Mar 18 20:18:57 GMT+1300 2018

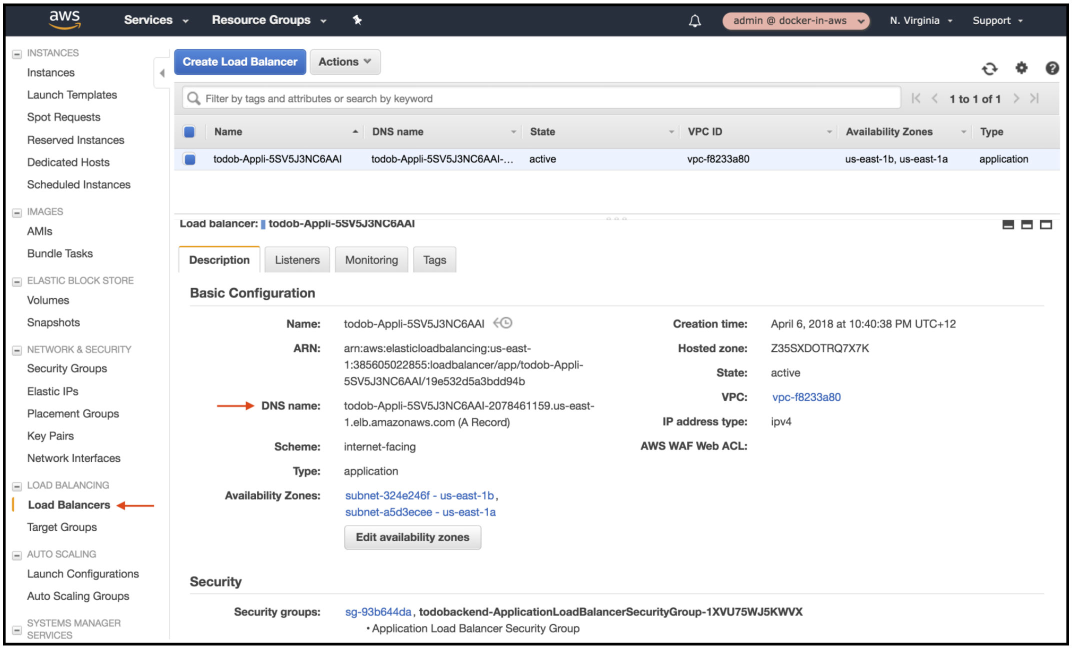
Availability Zone(s) us-east-1a, us-east-1b
Subnet(s) subnet-a5d3ecee,subnet-324e246f
Default Cooldown 300
Placement Group
Suspended Processes
Enabled Metrics
Instance Protection

Chapter 8: Deploying Applications Using ECS


Circular Dependency
(NOT allowed)
Application Autoscaling Security Group
Egress Rules
Destination
Protocol
Port
ApplicationDatabaseSecurityGroup
TCP
3306
Depends On
Depends On
Application Database Security Group
Ingress Rules
Source
Protocol
Port
ApplicationAutoscalingSecurityGroup
TCP
3306


ApplicationAutoscalingToApplicationDatabaseEgress
GroupId
ApplicationAutoscalingSecurityGroup
Egress Rule
DestinationSecurityGroupId
Protocol
Port
ApplicationDatabaseSecurityGroup
TCP
3306
ApplicationAutoscalingToApplicationDatabaseIngress
GroupId
ApplicationDatabaseSecurityGroup
Ingress Rule
SourceSecurityGroupId
Protocol
Port
ApplicationAutoscalingSecurityGroup
TCP
3306
Egress Rule is added dynamically
Depends On
Depends On
Depends On
Depends On
Ingress Rule is added dynamically
Application Autoscaling Security Group
Egress Rules
Destination
Protocol
Port
ApplicationDatabaseSecurityGroup
TCP
3306
Application Database Security Group
Ingress Rules
Source
Protocol
Port
ApplicationAutoscalingSecurityGroup
TCP
3306


Users
Application Load Balancer
Listener
/foo
* (default)
/bar
Listener Rule
Listener Rule
Target Group
Target Group
Target Group
ECS Service
ECS Service
ECS Service



Name	DNS name	State	VPC ID	Availability Zones	Type
todob-Appli-5SV5J3NC6AAI	todob-Appli-5SV5J3NC6AAI-...	active	vpc-f8233a80	us-east-1b, us-east-1a	application

Load balancer: todob-Appli-5SV5J3NC6AAI

Basic Configuration

Name: todob-Appli-5SV5J3NC6AAI

ARN: arn:aws:elasticloadbalancing:us-east-1:385605022855:loadbalancer/app/todob-Appli-5SV5J3NC6AAI/19e532d5a3bdd94b

DNS name: todob-Appli-5SV5J3NC6AAI-2078461159.us-east-1.elb.amazonaws.com (A Record)

Scheme: internet-facing

Type: application

Availability Zones: subnet-324e246f - us-east-1b, subnet-a5d3ecee - us-east-1a

Creation time: April 6, 2018 at 10:40:38 PM UTC+12

Hosted zone: Z35SXDOTRQ7X7K

State: active

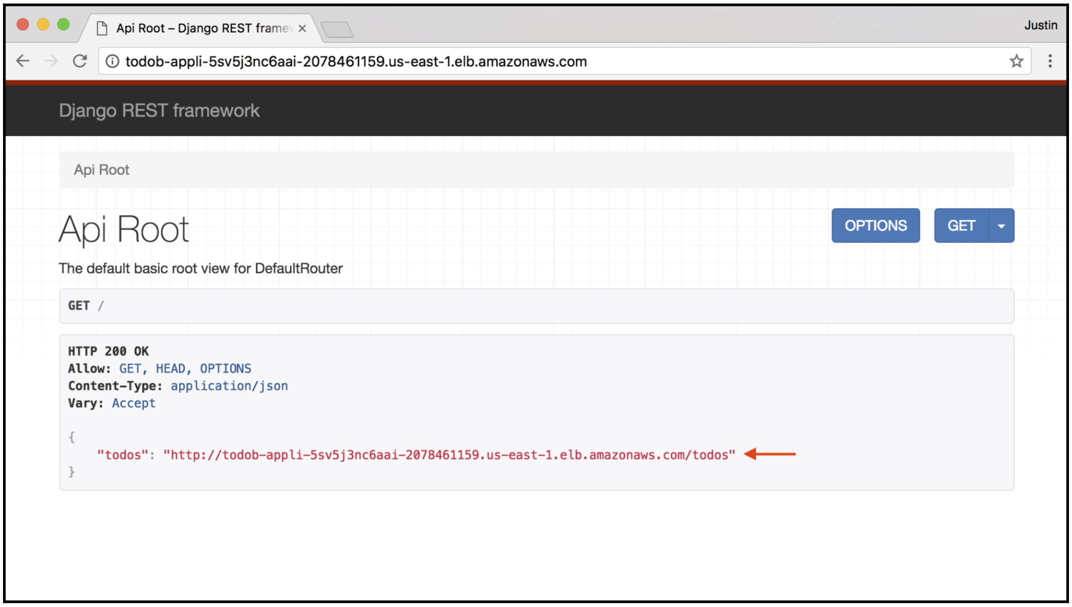
VPC: vpc-f8233a80

IP address type: ipv4

AWS WAF Web ACL:

Security

Security groups: sg-93b644da, todobackend-ApplicationLoadBalancerSecurityGroup-1XVU75WJ5KWVX
- Application Load Balancer Security Group



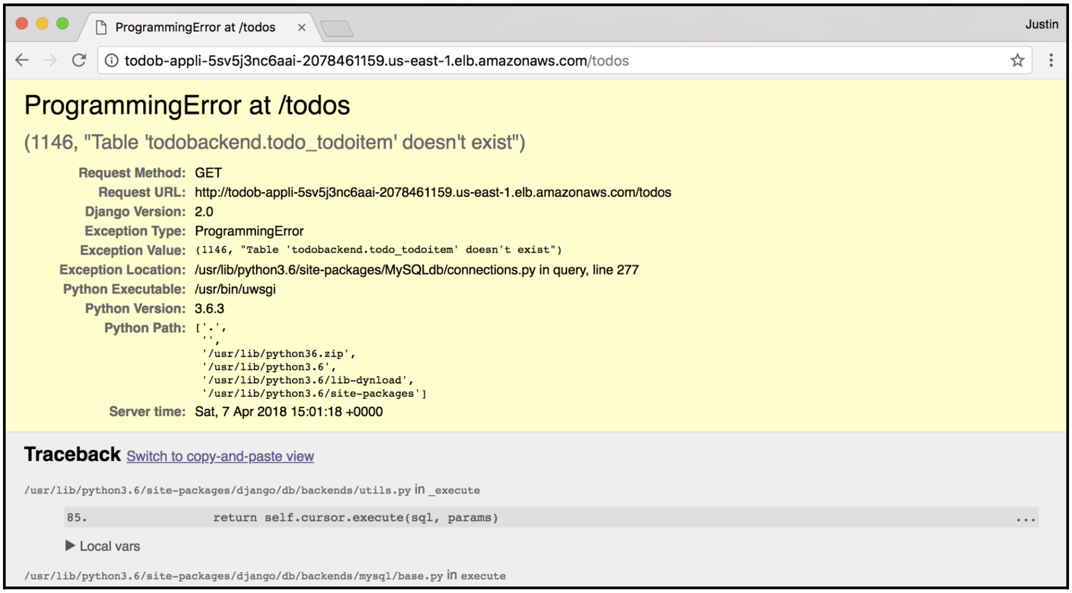
todob-appli-5sv5j3nc6aai-2078461159.us-east-1.elb.amazonaws.com

Api Root

The default basic root view for DefaultRouter

```
GET /
```

```
HTTP 200 OK
Allow: GET, HEAD, OPTIONS
Content-Type: application/json
Vary: Accept

{
    "todos": "http://todob-appli-5sv5j3nc6aai-2078461159.us-east-1.elb.amazonaws.com/todos"
}
```



ProgrammingError at /todos
Justin
todob-appli-5sv5j3nc6aai-2078461159.us-east-1.elb.amazonaws.com/todos

ProgrammingError at /todos

(1146, "Table 'todobackend.todo_todoitem' doesn't exist")

Request Method:	GET
Request URL:	http://todob-appli-5sv5j3nc6aai-2078461159.us-east-1.elb.amazonaws.com/todos
Django Version:	2.0
Exception Type:	ProgrammingError
Exception Value:	(1146, "Table 'todobackend.todo_todoitem' doesn't exist")
Exception Location:	/usr/lib/python3.6/site-packages/MySQLdb/connections.py in query, line 277
Python Executable:	/usr/bin/uwsgi
Python Version:	3.6.3
Python Path:	['.', '', '/usr/lib/python36.zip', '/usr/lib/python3.6', '/usr/lib/python3.6/lib-dynload', '/usr/lib/python3.6/site-packages']
Server time:	Sat, 7 Apr 2018 15:01:18 +0000

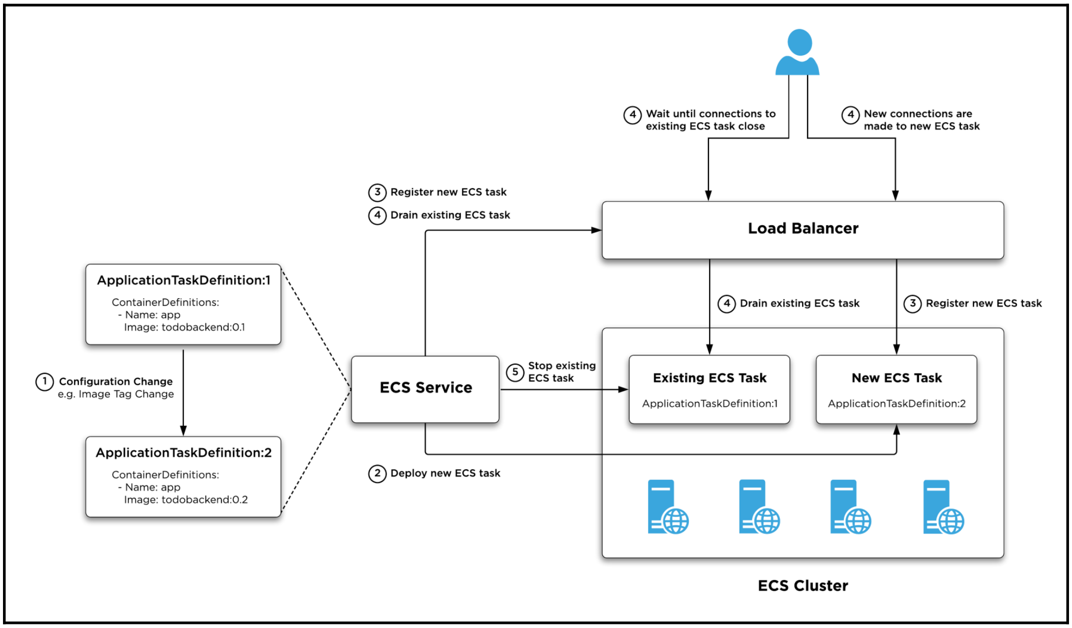
Traceback Switch to copy-and-paste view

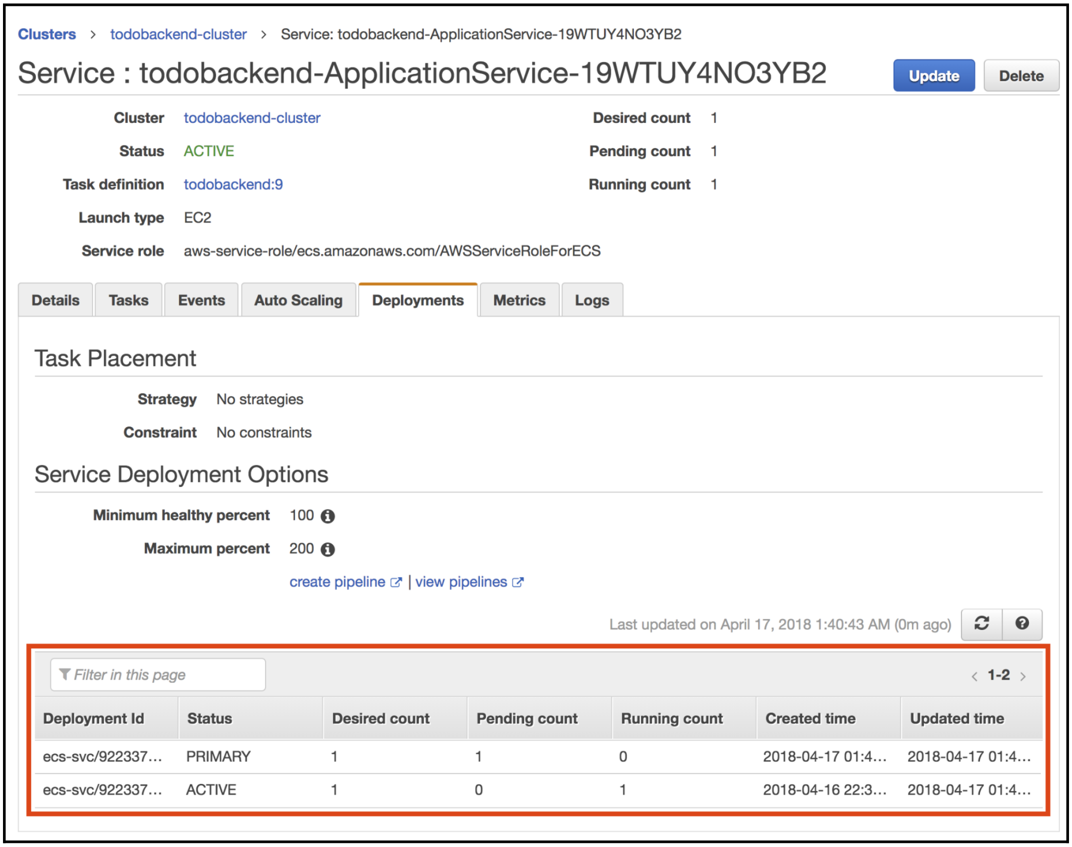
/usr/lib/python3.6/site-packages/django/db/backends/utils.py in _execute

```
85.                return self.cursor.execute(sql, params)                ...
```

▶ Local vars

/usr/lib/python3.6/site-packages/django/db/backends/mysql/base.py in execute





Clusters > todobackend-cluster > Service: todobackend-ApplicationService-19WTUY4NO3YB2

Service : todobackend-ApplicationService-19WTUY4NO3YB2

Cluster	todobackend-cluster	Desired count	1
Status	ACTIVE	Pending count	1
Task definition	todobackend:9	Running count	1
Launch type	EC2		
Service role	aws-service-role/ecs.amazonaws.com/AWSServiceRoleForECS		

Details
Tasks
Events
Auto Scaling
Deployments
Metrics
Logs

Task Placement

Strategy: No strategies

Constraint: No constraints

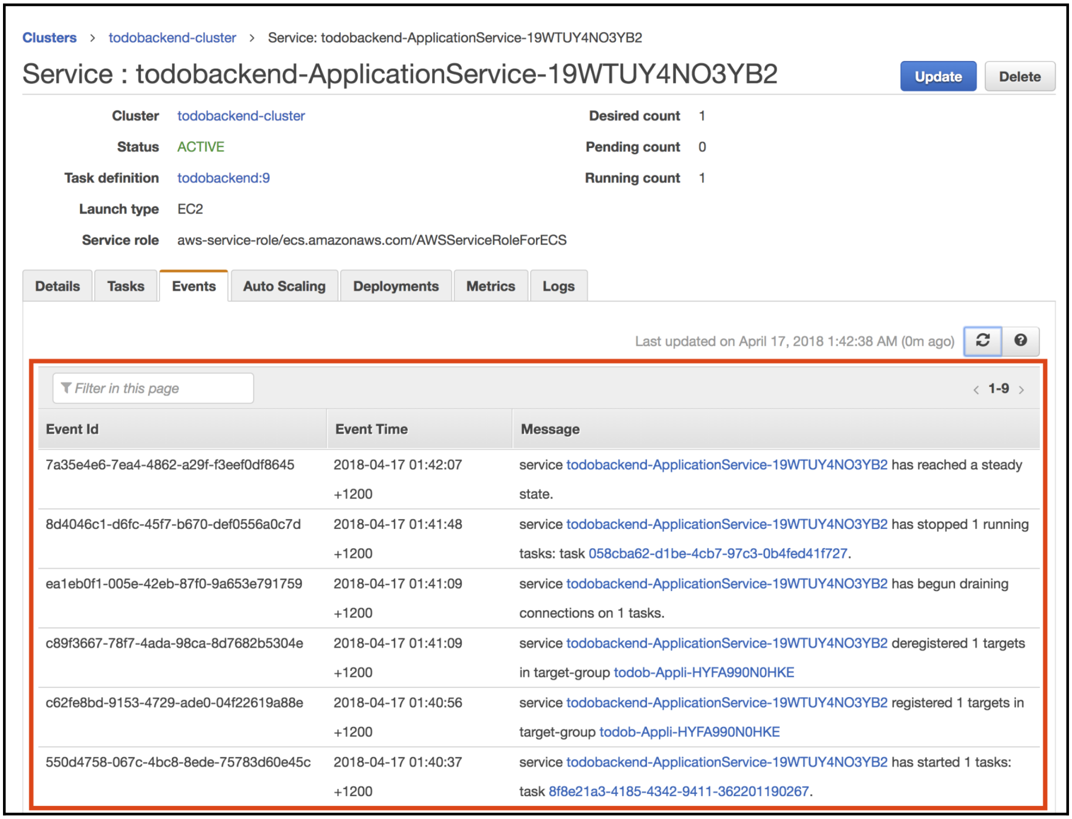
Service Deployment Options

Minimum healthy percent: 100

Maximum percent: 200

Last updated on April 17, 2018 1:40:43 AM (0m ago)

Deployment Id	Status	Desired count	Pending count	Running count	Created time	Updated time
ecs-svc/922337…	PRIMARY	1	1	0	2018-04-17 01:4…	2018-04-17 01:4…
ecs-svc/922337…	ACTIVE	1	0	1	2018-04-16 22:3…	2018-04-17 01:4…



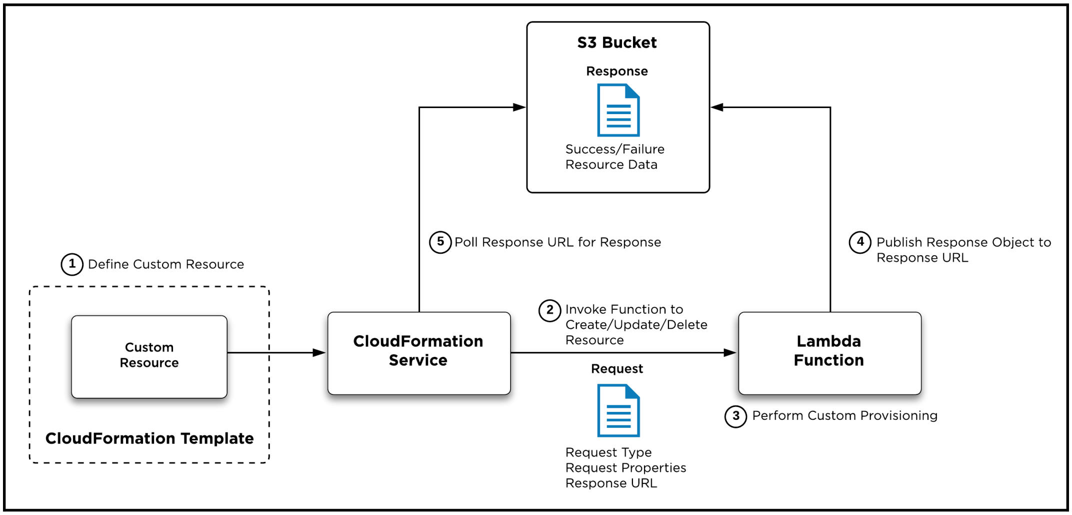
Clusters > todobackend-cluster > Service: todobackend-ApplicationService-19WTUY4NO3YB2

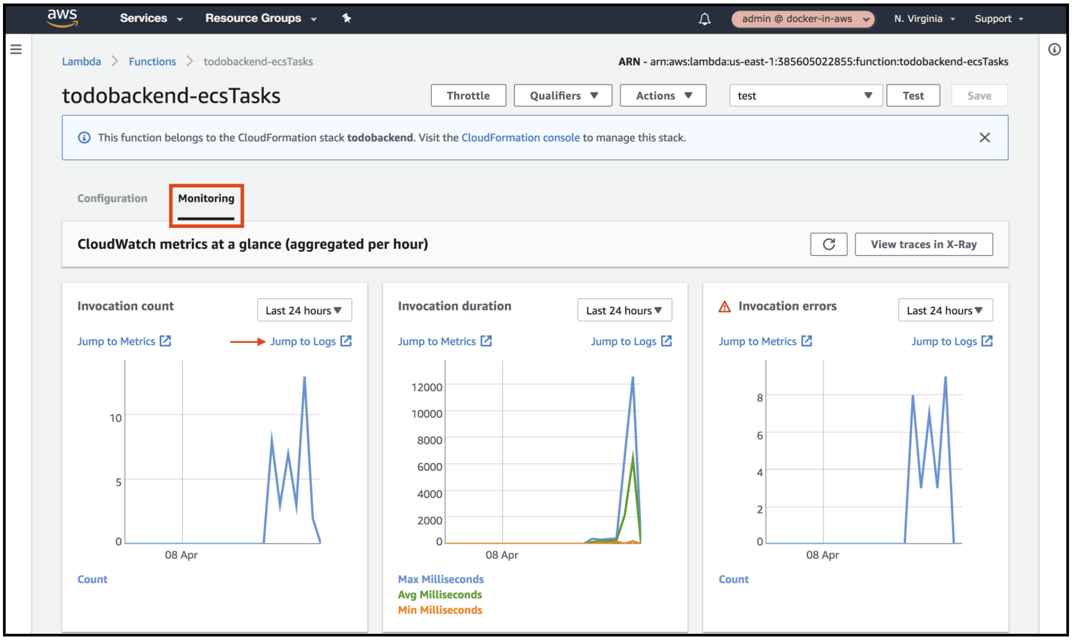
Service : todobackend-ApplicationService-19WTUY4NO3YB2

Cluster	todobackend-cluster	Desired count	1
Status	ACTIVE	Pending count	0
Task definition	todobackend:9	Running count	1
Launch type	EC2		
Service role	aws-service-role/ecs.amazonaws.com/AWSServiceRoleForECS		

Last updated on April 17, 2018 1:42:38 AM (0m ago)

Event Id	Event Time	Message
7a35e4e6-7ea4-4862-a29f-f3eef0df8645	2018-04-17 01:42:07 +1200	service todobackend-ApplicationService-19WTUY4NO3YB2 has reached a steady state.
8d4046c1-d6fc-45f7-b670-def0556a0c7d	2018-04-17 01:41:48 +1200	service todobackend-ApplicationService-19WTUY4NO3YB2 has stopped 1 running tasks: task 058cba62-d1be-4cb7-97c3-0b4fed41f727.
ea1eb0f1-005e-42eb-87f0-9a653e791759	2018-04-17 01:41:09 +1200	service todobackend-ApplicationService-19WTUY4NO3YB2 has begun draining connections on 1 tasks.
c89f3667-78f7-4ada-98ca-8d7682b5304e	2018-04-17 01:41:09 +1200	service todobackend-ApplicationService-19WTUY4NO3YB2 deregistered 1 targets in target-group todob-Appli-HYFA990N0HKE
c62fe8bd-9153-4729-ade0-04f22619a88e	2018-04-17 01:40:56 +1200	service todobackend-ApplicationService-19WTUY4NO3YB2 registered 1 targets in target-group todob-Appli-HYFA990N0HKE
550d4758-067c-4bc8-8ede-75783d60e45c	2018-04-17 01:40:37 +1200	service todobackend-ApplicationService-19WTUY4NO3YB2 has started 1 tasks: task 8f8e21a3-4185-4342-9411-362201190267.



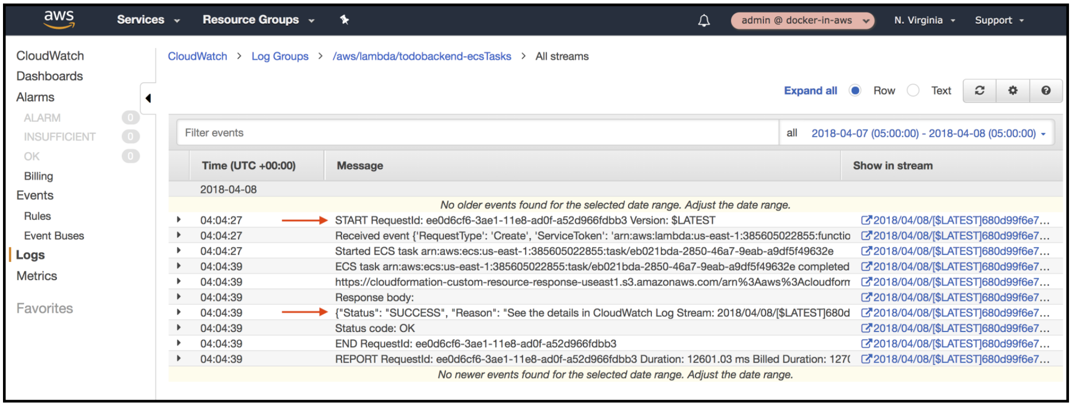


ARN - arn:aws:lambda:us-east-1:385605022855:function:todobackend-ecsTasks

todobackend-ecsTasks

This function belongs to the CloudFormation stack **todobackend**. Visit the CloudFormation console to manage this stack.

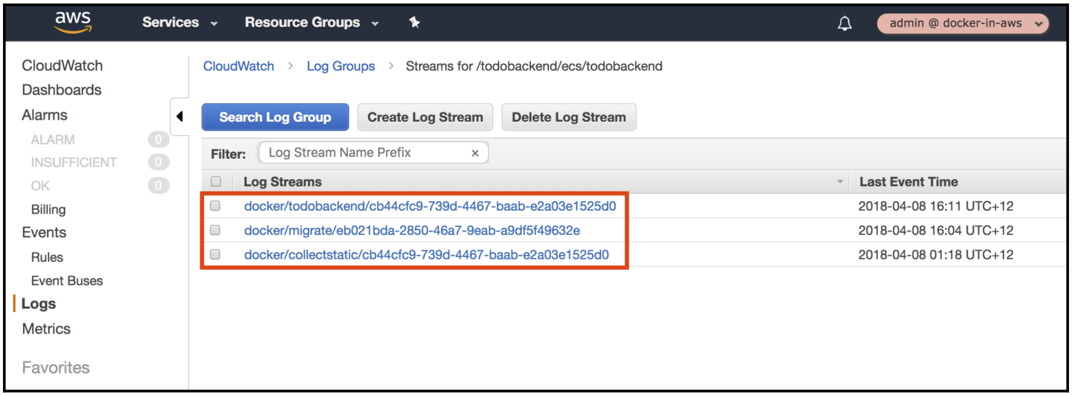
CloudWatch metrics at a glance (aggregated per hour)



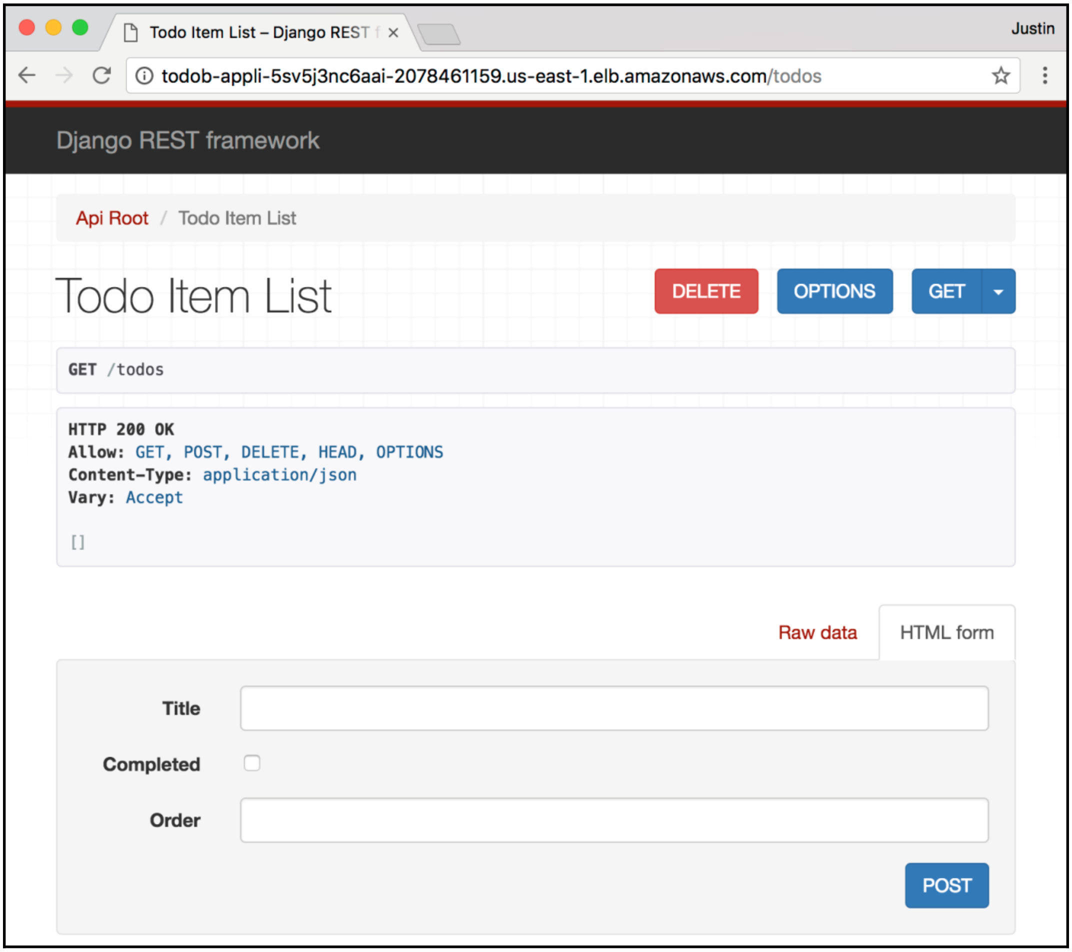
CloudWatch > Log Groups > /aws/lambda/todobackend-ecsTasks > All streams

2018-04-07 (05:00:00) - 2018-04-08 (05:00:00)

Time (UTC +00:00)	Message	Show in stream
2018-04-08		
	No older events found for the selected date range. Adjust the date range.	
04:04:27	START RequestId: ee0d6cf6-3ae1-11e8-ad0f-a52d966fdbb3 Version: $LATEST	2018/04/08/[$LATEST]680d99f6e7…
04:04:27	Received event {'RequestType': 'Create', 'ServiceToken': 'arn:aws:lambda:us-east-1:385605022855:functio	2018/04/08/[$LATEST]680d99f6e7…
04:04:27	Started ECS task arn:aws:ecs:us-east-1:385605022855:task/eb021bda-2850-46a7-9eab-a9df5f49632e	2018/04/08/[$LATEST]680d99f6e7…
04:04:39	ECS task arn:aws:ecs:us-east-1:385605022855:task/eb021bda-2850-46a7-9eab-a9df5f49632e completed	2018/04/08/[$LATEST]680d99f6e7…
04:04:39	https://cloudformation-custom-resource-response-useast1.s3.amazonaws.com/arn%3Aaws%3Acloudforn	2018/04/08/[$LATEST]680d99f6e7…
04:04:39	Response body:	2018/04/08/[$LATEST]680d99f6e7…
04:04:39	{"Status": "SUCCESS", "Reason": "See the details in CloudWatch Log Stream: 2018/04/08/[$LATEST]680d	2018/04/08/[$LATEST]680d99f6e7…
04:04:39	Status code: OK	2018/04/08/[$LATEST]680d99f6e7…
04:04:39	END RequestId: ee0d6cf6-3ae1-11e8-ad0f-a52d966fdbb3	2018/04/08/[$LATEST]680d99f6e7…
04:04:39	REPORT RequestId: ee0d6cf6-3ae1-11e8-ad0f-a52d966fdbb3 Duration: 12601.03 ms Billed Duration: 127(	2018/04/08/[$LATEST]680d99f6e7…
	No newer events found for the selected date range. Adjust the date range.	



Log Streams	Last Event Time
docker/todobackend/cb44cfc9-739d-4467-baab-e2a03e1525d0	2018-04-08 16:11 UTC+12
docker/migrate/eb021bda-2850-46a7-9eab-a9df5f49632e	2018-04-08 16:04 UTC+12
docker/collectstatic/cb44cfc9-739d-4467-baab-e2a03e1525d0	2018-04-08 01:18 UTC+12


Todo Item List – Django REST f
Justin
todob-appli-5sv5j3nc6aai-2078461159.us-east-1.elb.amazonaws.com/todos
Django REST framework
Api Root / Todo Item List
Todo Item List
DELETE
OPTIONS
GET
Raw data
HTML form
POST

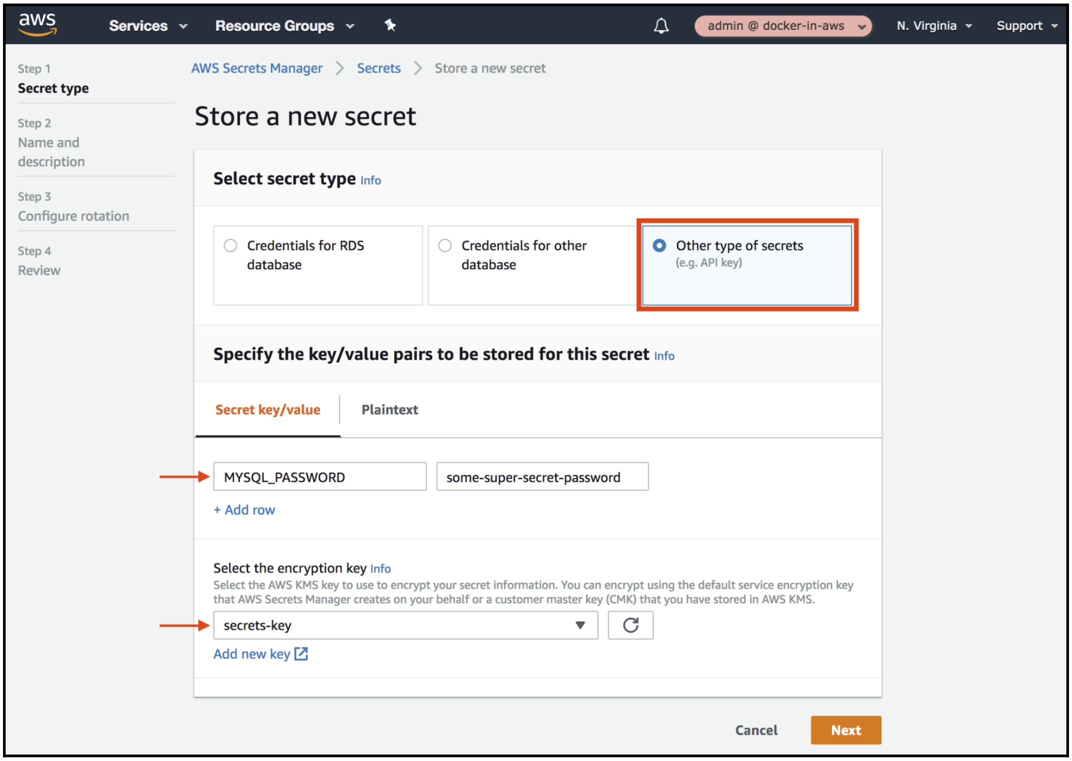
```
GET /todos
```

```
HTTP 200 OK
Allow: GET, POST, DELETE, HEAD, OPTIONS
Content-Type: application/json
Vary: Accept

[]
```

Title

Completed □

Order



Step 1
Secret type

Step 2
Name and description

Step 3
Configure rotation

Step 4
Review

AWS Secrets Manager > Secrets > Store a new secret

Store a new secret

Select secret type Info

○ Credentials for RDS database

○ Credentials for other database

● Other type of secrets
(e.g. API key)

Specify the key/value pairs to be stored for this secret Info

Secret key/value | Plaintext

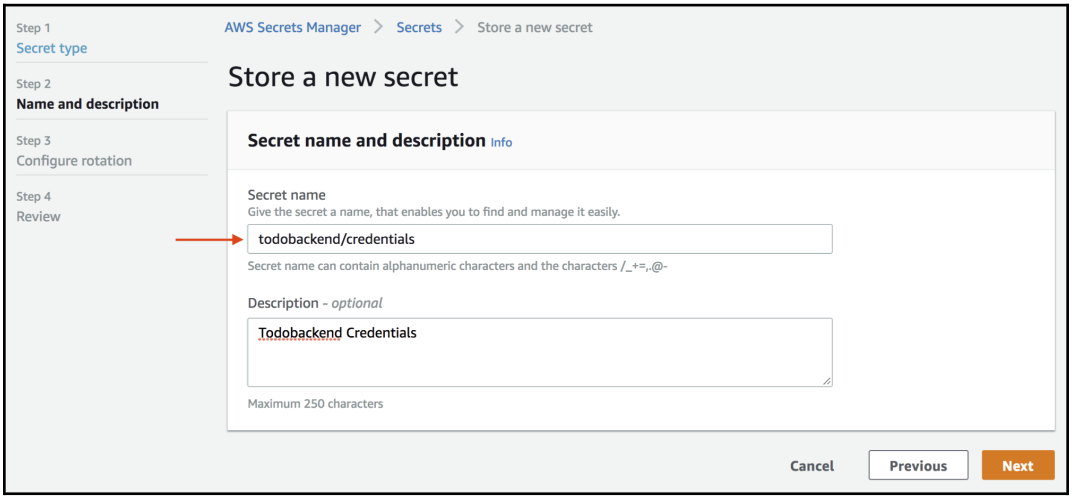
MYSQL_PASSWORD | some-super-secret-password

+ Add row

Select the encryption key Info
Select the AWS KMS key to use to encrypt your secret information. You can encrypt using the default service encryption key that AWS Secrets Manager creates on your behalf or a customer master key (CMK) that you have stored in AWS KMS.

secrets-key

Add new key


Step 1
Secret type

Step 2
Name and description

Step 3
Configure rotation

Step 4
Review

AWS Secrets Manager > Secrets > Store a new secret

Store a new secret

Secret name and description Info

Secret name
Give the secret a name, that enables you to find and manage it easily.

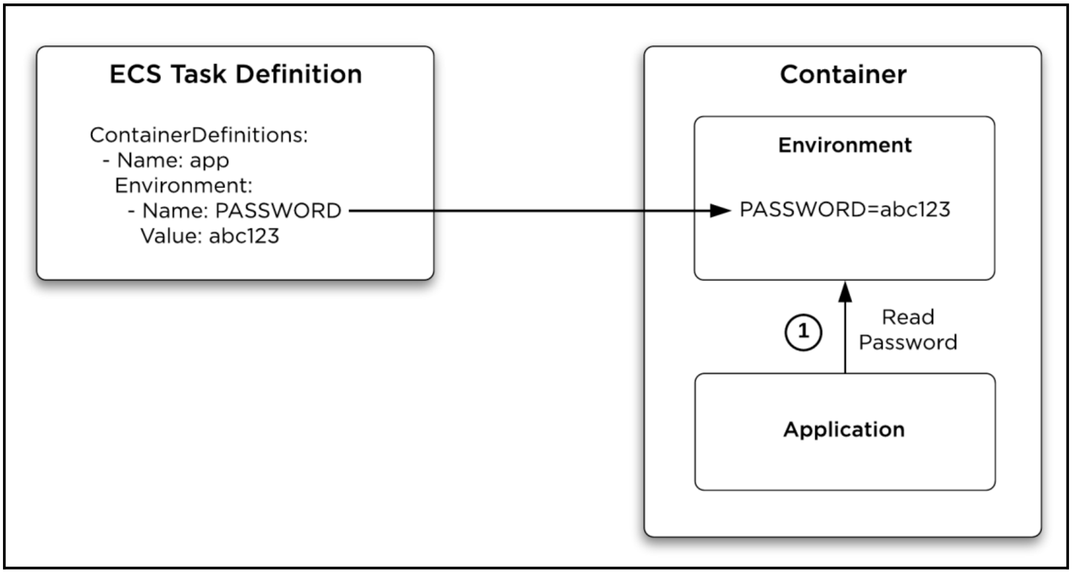
todobackend/credentials

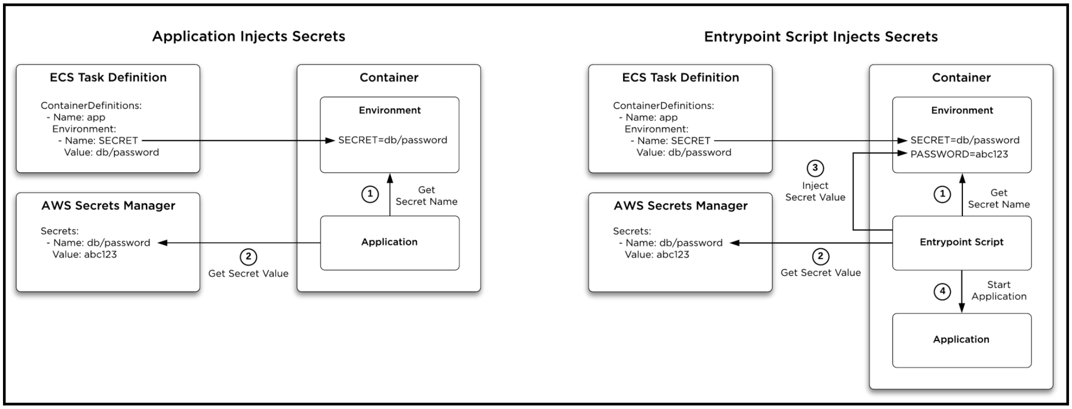
Secret name can contain alphanumeric characters and the characters /_+=,.@-

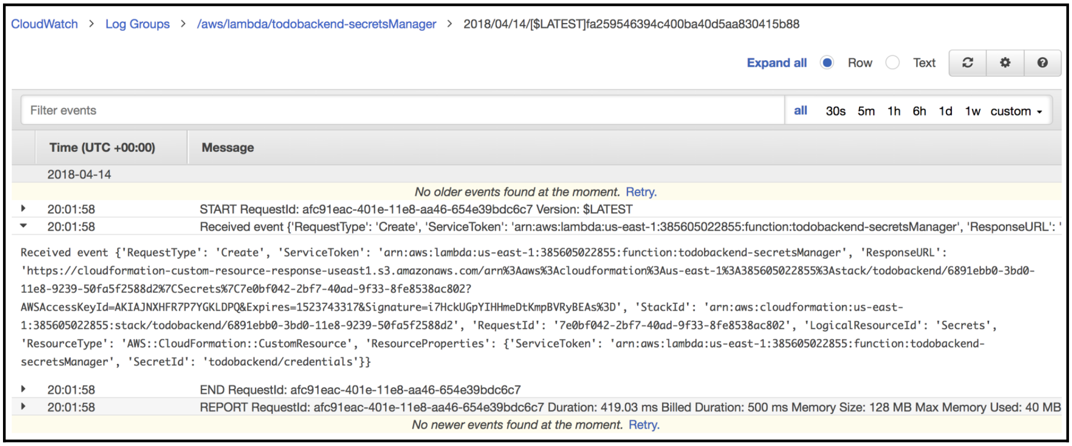
Description - *optional*

Todobackend Credentials

Maximum 250 characters


ECS Task Definition
ContainerDefinitions:
- Name: app
Environment:
- Name: PASSWORD
Value: abc123
Container
Environment
PASSWORD=abc123
1
Read Password
Application

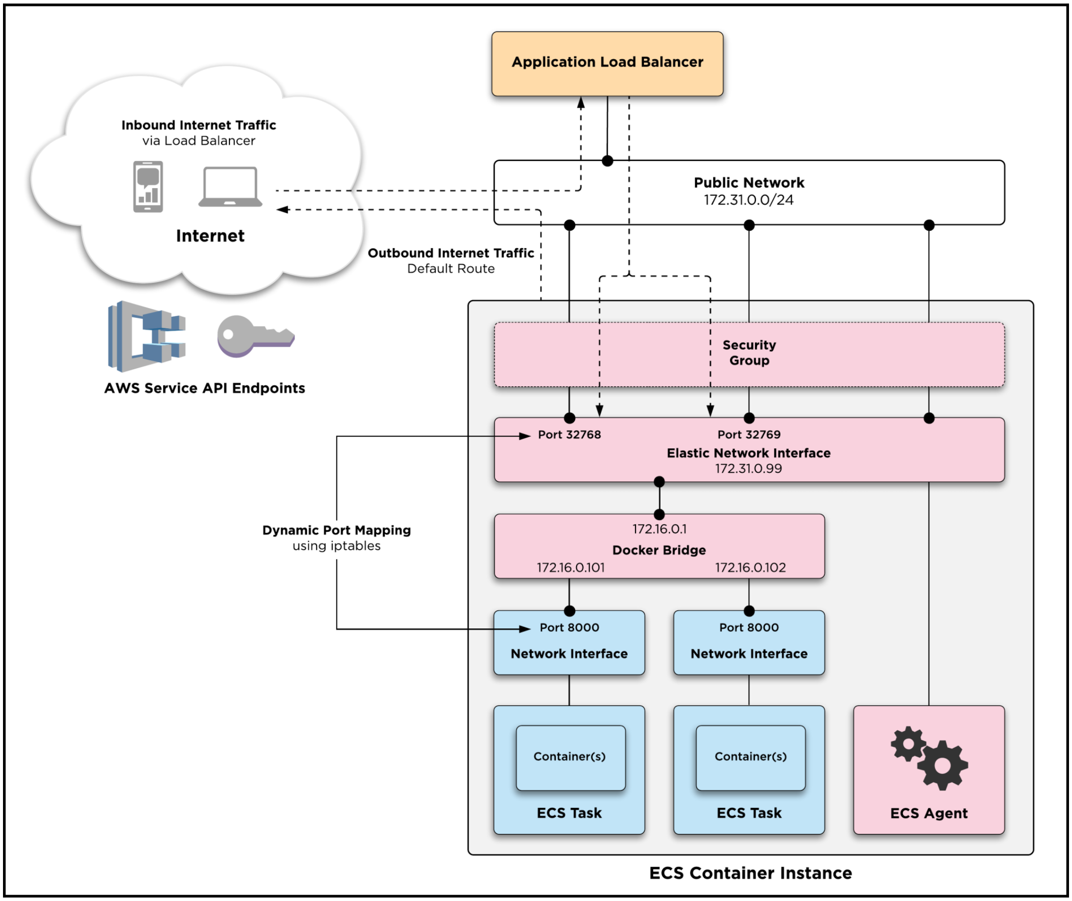

Application Injects Secrets
ECS Task Definition
ContainerDefinitions:
- Name: app
Environment:
- Name: SECRET
Value: db/password
AWS Secrets Manager
Secrets:
- Name: db/password
Value: abc123
Container
Environment
SECRET=db/password
1
Get Secret Name
Application
2
Get Secret Value
Entrypoint Script Injects Secrets
ECS Task Definition
ContainerDefinitions:
- Name: app
Environment:
- Name: SECRET
Value: db/password
AWS Secrets Manager
Secrets:
- Name: db/password
Value: abc123
Container
Environment
SECRET=db/password
PASSWORD=abc123
3
Inject Secret Value
1
Get Secret Name
Entrypoint Script
2
Get Secret Value
4
Start Application
Application

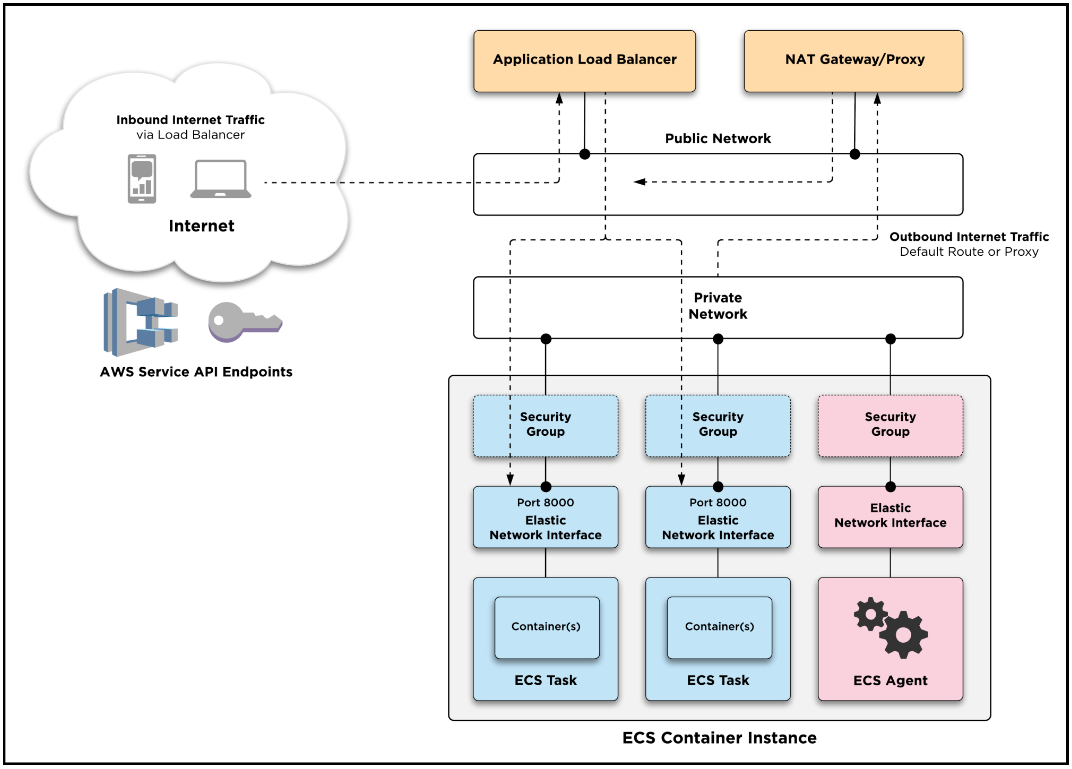


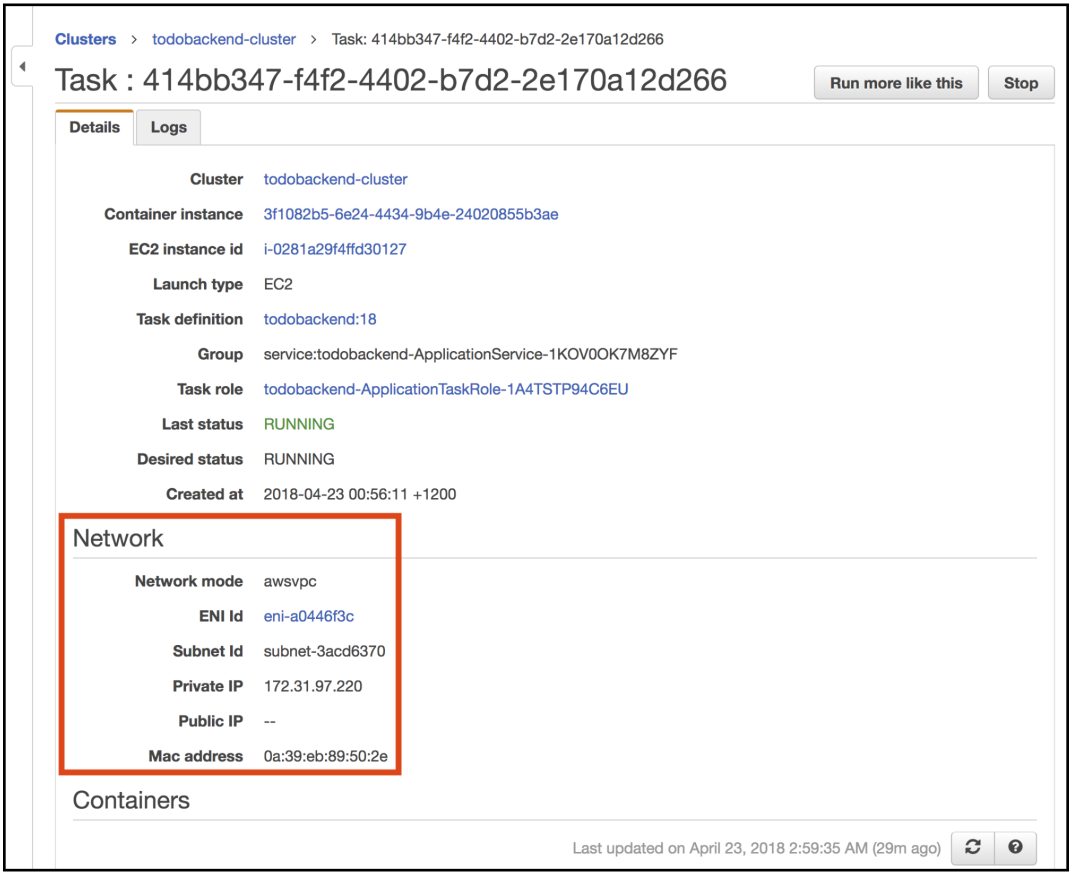
CloudWatch > Log Groups > /aws/lambda/todobackend-secretsManager > 2018/04/14/[$LATEST]fa259546394c400ba40d5aa830415b88
Expand all ● Row ○ Text
Filter events
all 30s 5m 1h 6h 1d 1w custom

```
Time (UTC +00:00)     Message
2018-04-14
                      No older events found at the moment. Retry.
20:01:58              START RequestId: afc91eac-401e-11e8-aa46-654e39bdc6c7 Version: $LATEST
20:01:58              Received event {'RequestType': 'Create', 'ServiceToken': 'arn:aws:lambda:us-east-1:385605022855:function:todobackend-secretsManager', 'ResponseURL': '

Received event {'RequestType': 'Create', 'ServiceToken': 'arn:aws:lambda:us-east-1:385605022855:function:todobackend-secretsManager', 'ResponseURL':
'https://cloudformation-custom-resource-response-useast1.s3.amazonaws.com/arn%3Aaws%3Acloudformation%3Aus-east-1%3A385605022855%3Astack/todobackend/6891ebb0-3bd0-
11e8-9239-50fa5f2588d2%7CSecrets%7C7e0bf042-2bf7-40ad-9f33-8fe8538ac802?
AWSAccessKeyId=AKIAJNXHFR7P7YGKLDPQ&Expires=1523743317&Signature=i7HckUGpYIHHmeDtKmpBVRyBEAs%3D', 'StackId': 'arn:aws:cloudformation:us-east-
1:385605022855:stack/todobackend/6891ebb0-3bd0-11e8-9239-50fa5f2588d2', 'RequestId': '7e0bf042-2bf7-40ad-9f33-8fe8538ac802', 'LogicalResourceId': 'Secrets',
'ResourceType': 'AWS::CloudFormation::CustomResource', 'ResourceProperties': {'ServiceToken': 'arn:aws:lambda:us-east-1:385605022855:function:todobackend-
secretsManager', 'SecretId': 'todobackend/credentials'}}

20:01:58              END RequestId: afc91eac-401e-11e8-aa46-654e39bdc6c7
20:01:58              REPORT RequestId: afc91eac-401e-11e8-aa46-654e39bdc6c7 Duration: 419.03 ms Billed Duration: 500 ms Memory Size: 128 MB Max Memory Used: 40 MB
                      No newer events found at the moment. Retry.
```

Chapter 10: Isolating Network Access




Application Load Balancer
NAT Gateway/Proxy
Inbound Internet Traffic
via Load Balancer
Internet
Public Network
Outbound Internet Traffic
Default Route or Proxy
Private
Network
AWS Service API Endpoints
Security
Group
Security
Group
Security
Group
Port 8000
Elastic
Network Interface
Port 8000
Elastic
Network Interface
Elastic
Network Interface
Container(s)
ECS Task
Container(s)
ECS Task
ECS Agent
ECS Container Instance



Clusters > todobackend-cluster > Task: 414bb347-f4f2-4402-b7d2-2e170a12d266

Task : 414bb347-f4f2-4402-b7d2-2e170a12d266

Run more like this
Stop
Details
Logs

Cluster	todobackend-cluster
Container instance	3f1082b5-6e24-4434-9b4e-24020855b3ae
EC2 instance id	i-0281a29f4ffd30127
Launch type	EC2
Task definition	todobackend:18
Group	service:todobackend-ApplicationService-1KOV0OK7M8ZYF
Task role	todobackend-ApplicationTaskRole-1A4TSTP94C6EU
Last status	RUNNING
Desired status	RUNNING
Created at	2018-04-23 00:56:11 +1200

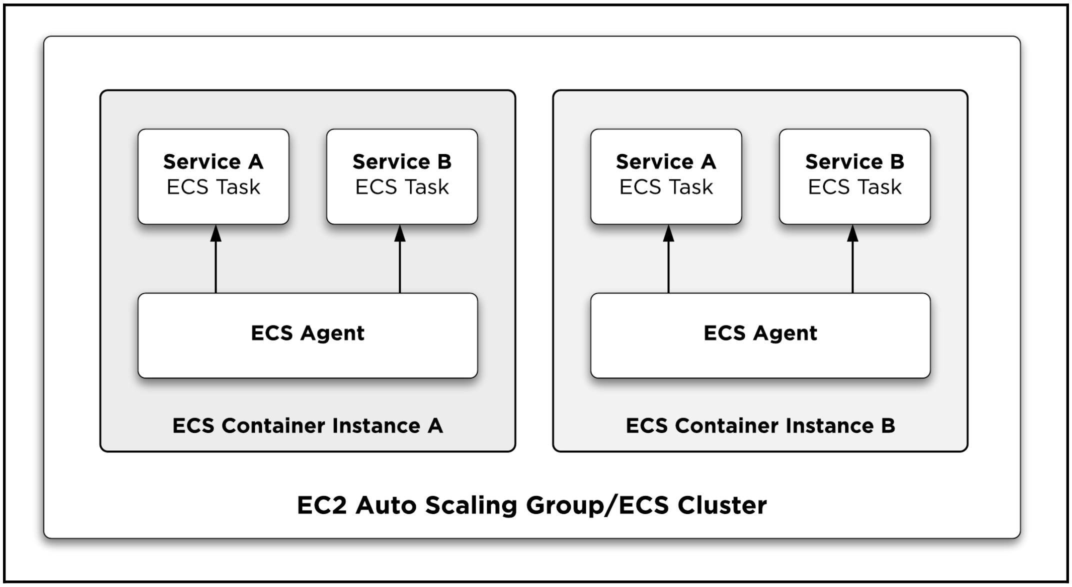
Network

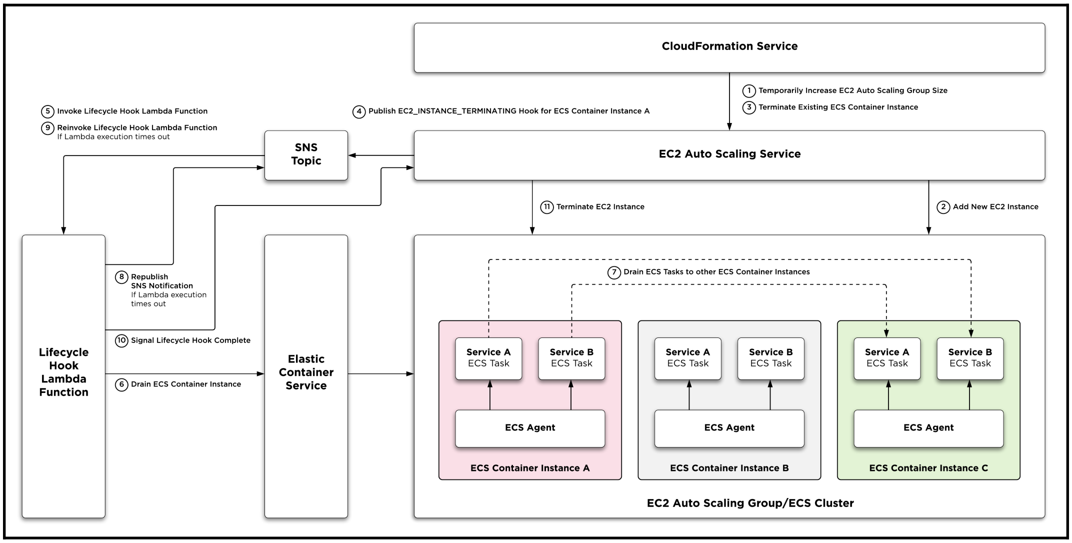
Network mode	awsvpc
ENI Id	eni-a0446f3c
Subnet Id	subnet-3acd6370
Private IP	172.31.97.220
Public IP	--
Mac address	0a:39:eb:89:50:2e

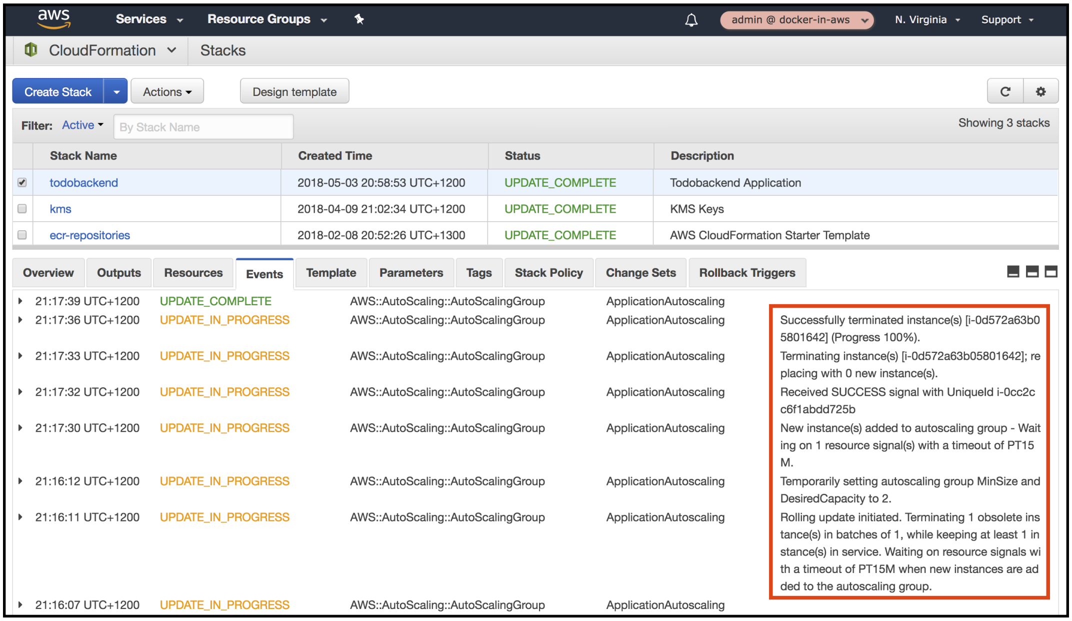
Containers

Last updated on April 23, 2018 2:59:35 AM (29m ago)

Chapter 11: Managing ECS Infrastructure Life Cycle

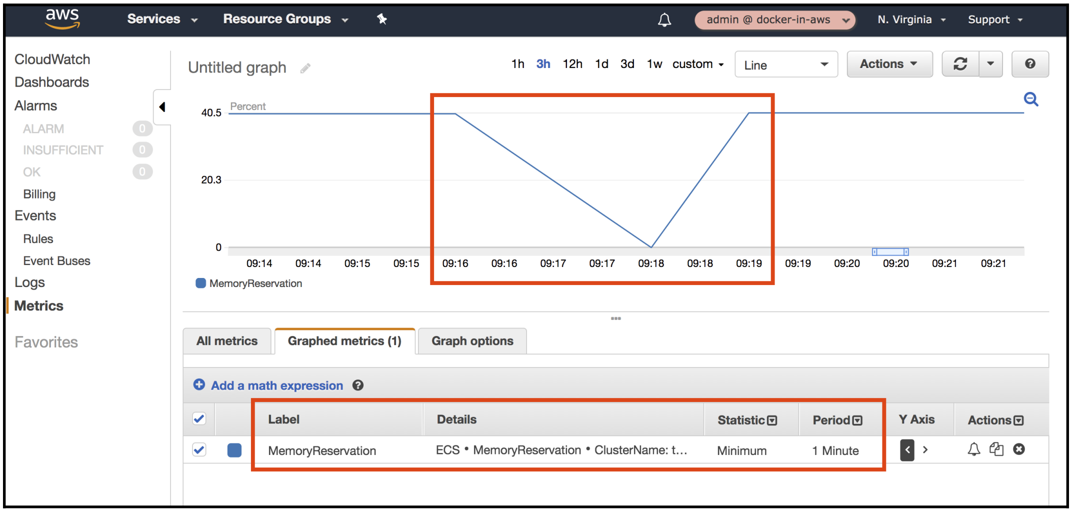



CloudFormation Service
1 Temporarily Increase EC2 Auto Scaling Group Size
3 Terminate Existing ECS Container Instance
5 Invoke Lifecycle Hook Lambda Function
9 Reinvoke Lifecycle Hook Lambda Function
If Lambda execution times out
4 Publish EC2_INSTANCE_TERMINATING Hook for ECS Container Instance A
SNS Topic
EC2 Auto Scaling Service
11 Terminate EC2 Instance
2 Add New EC2 Instance
8 Republish SNS Notification
If Lambda execution times out
10 Signal Lifecycle Hook Complete
6 Drain ECS Container Instance
Lifecycle Hook Lambda Function
Elastic Container Service
7 Drain ECS Tasks to other ECS Container Instances
Service A
ECS Task
Service B
ECS Task
ECS Agent
ECS Container Instance A
Service A
ECS Task
Service B
ECS Task
ECS Agent
ECS Container Instance B
Service A
ECS Task
Service B
ECS Task
ECS Agent
ECS Container Instance C
EC2 Auto Scaling Group/ECS Cluster

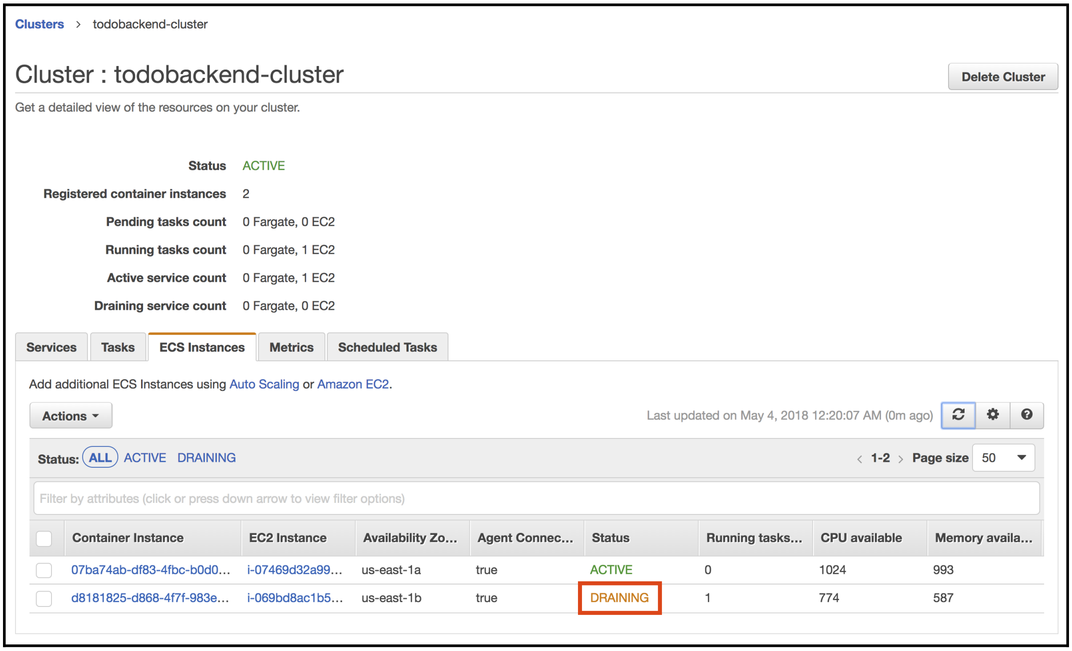


	Stack Name	Created Time	Status	Description
☑	todobackend	2018-05-03 20:58:53 UTC+1200	UPDATE_COMPLETE	Todobackend Application
□	kms	2018-04-09 21:02:34 UTC+1200	UPDATE_COMPLETE	KMS Keys
□	ecr-repositories	2018-02-08 20:52:26 UTC+1300	UPDATE_COMPLETE	AWS CloudFormation Starter Template

21:17:39 UTC+1200	UPDATE_COMPLETE	AWS::AutoScaling::AutoScalingGroup	ApplicationAutoscaling	
21:17:36 UTC+1200	UPDATE_IN_PROGRESS	AWS::AutoScaling::AutoScalingGroup	ApplicationAutoscaling	Successfully terminated instance(s) [i-0d572a63b05801642] (Progress 100%).
21:17:33 UTC+1200	UPDATE_IN_PROGRESS	AWS::AutoScaling::AutoScalingGroup	ApplicationAutoscaling	Terminating instance(s) [i-0d572a63b05801642]; replacing with 0 new instance(s).
21:17:32 UTC+1200	UPDATE_IN_PROGRESS	AWS::AutoScaling::AutoScalingGroup	ApplicationAutoscaling	Received SUCCESS signal with UniqueId i-0cc2cc6f1abdd725b
21:17:30 UTC+1200	UPDATE_IN_PROGRESS	AWS::AutoScaling::AutoScalingGroup	ApplicationAutoscaling	New instance(s) added to autoscaling group - Waiting on 1 resource signal(s) with a timeout of PT15M.
21:16:12 UTC+1200	UPDATE_IN_PROGRESS	AWS::AutoScaling::AutoScalingGroup	ApplicationAutoscaling	Temporarily setting autoscaling group MinSize and DesiredCapacity to 2.
21:16:11 UTC+1200	UPDATE_IN_PROGRESS	AWS::AutoScaling::AutoScalingGroup	ApplicationAutoscaling	Rolling update initiated. Terminating 1 obsolete instance(s) in batches of 1, while keeping at least 1 instance(s) in service. Waiting on resource signals with a timeout of PT15M when new instances are added to the autoscaling group.
21:16:07 UTC+1200	UPDATE_IN_PROGRESS	AWS::AutoScaling::AutoScalingGroup	ApplicationAutoscaling	



☑		Label	Details	Statistic	Period	Y Axis	Actions
☑	🟦	MemoryReservation	ECS • MemoryReservation • ClusterName: t...	Minimum	1 Minute	< >	



Clusters › todobackend-cluster

Cluster : todobackend-cluster

Get a detailed view of the resources on your cluster.

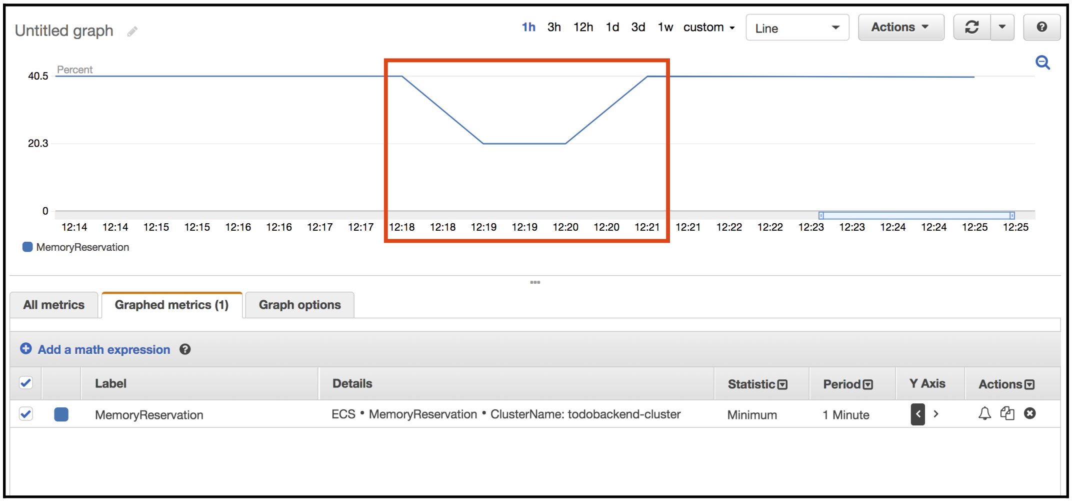
Status	ACTIVE
Registered container instances	2
Pending tasks count	0 Fargate, 0 EC2
Running tasks count	0 Fargate, 1 EC2
Active service count	0 Fargate, 1 EC2
Draining service count	0 Fargate, 0 EC2

Services
Tasks
ECS Instances
Metrics
Scheduled Tasks

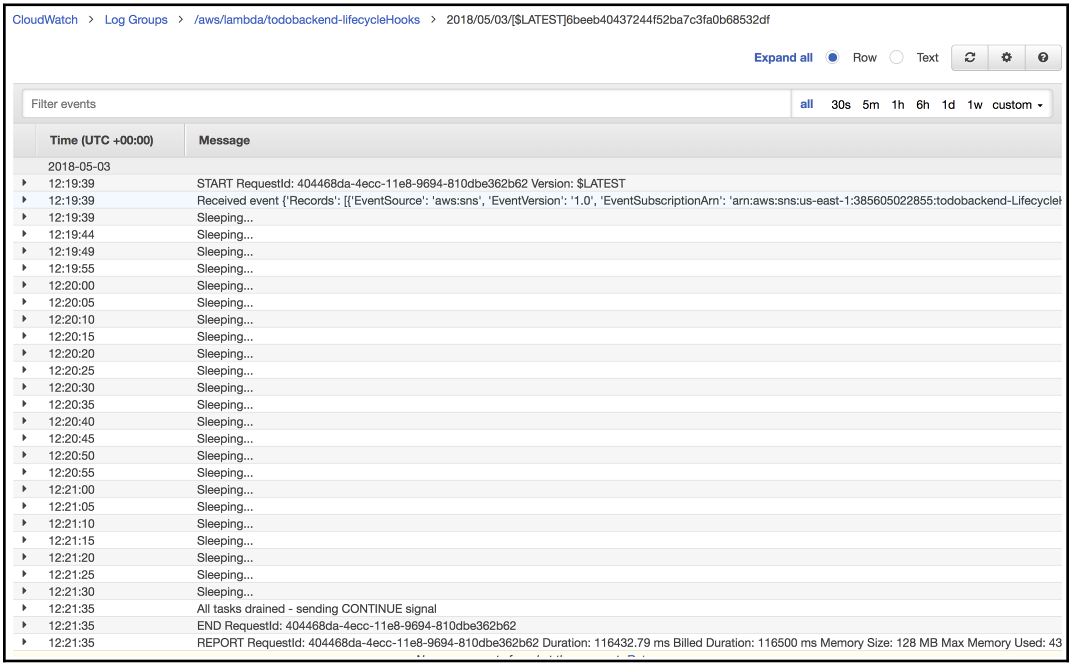
Add additional ECS Instances using Auto Scaling or Amazon EC2.

Actions
Last updated on May 4, 2018 12:20:07 AM (0m ago)
Status: ALL ACTIVE DRAINING
1-2 Page size 50
Filter by attributes (click or press down arrow to view filter options)

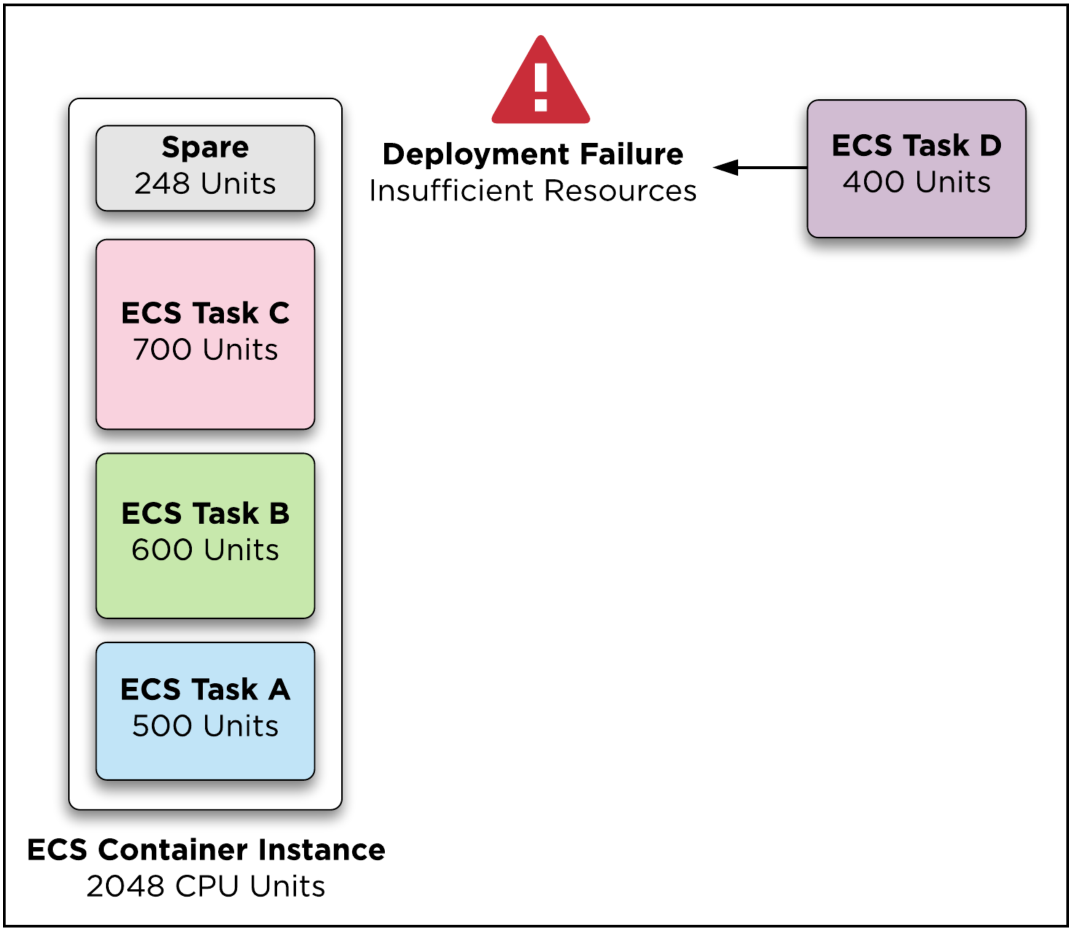
Container Instance	EC2 Instance	Availability Zo...	Agent Connec...	Status	Running tasks...	CPU available	Memory availa...
07ba74ab-df83-4fbc-b0d0...	i-07469d32a99...	us-east-1a	true	ACTIVE	0	1024	993
d8181825-d868-4f7f-983e...	i-069bd8ac1b5...	us-east-1b	true	DRAINING	1	774	587

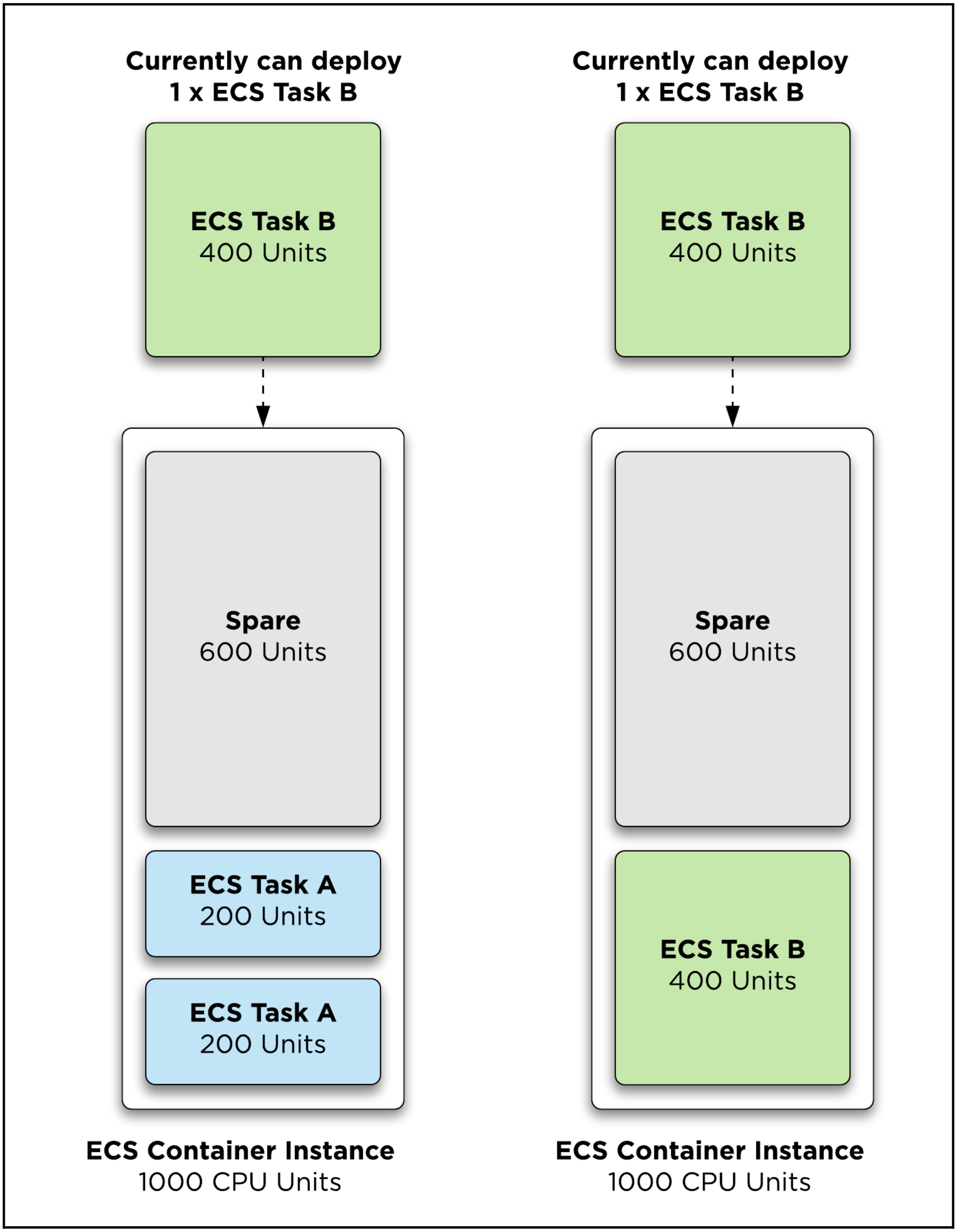


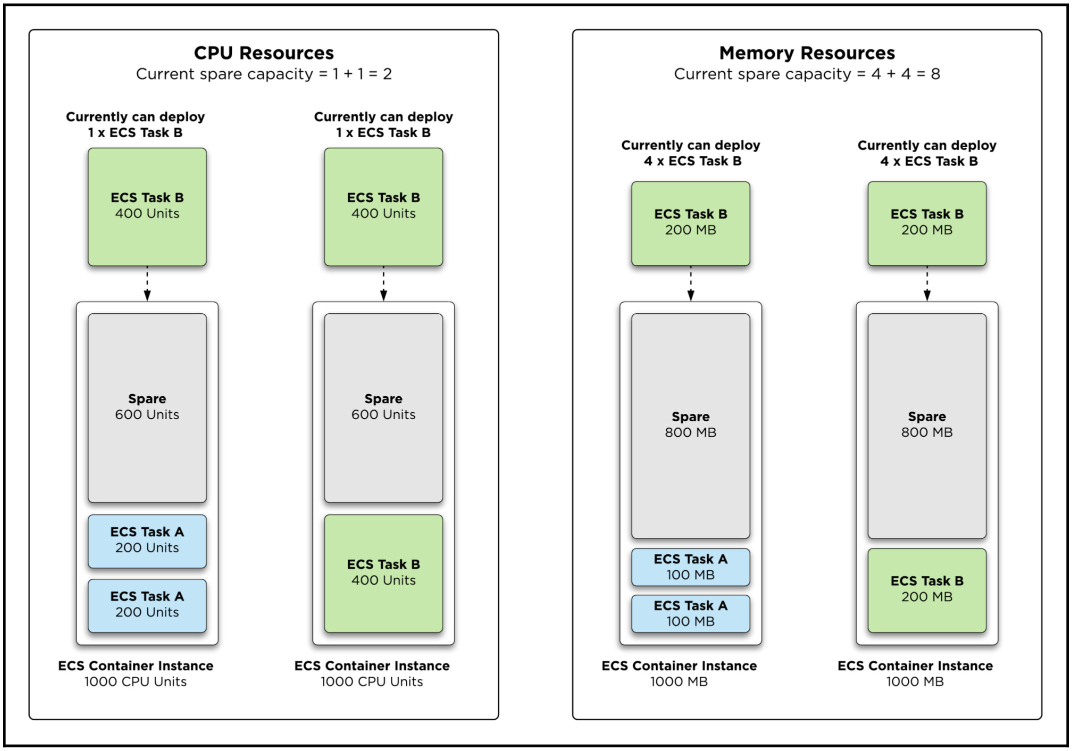
☑		Label	Details	Statistic	Period	Y Axis	Actions
☑	🟦	MemoryReservation	ECS • MemoryReservation • ClusterName: todobackend-cluster	Minimum	1 Minute	‹ ›	

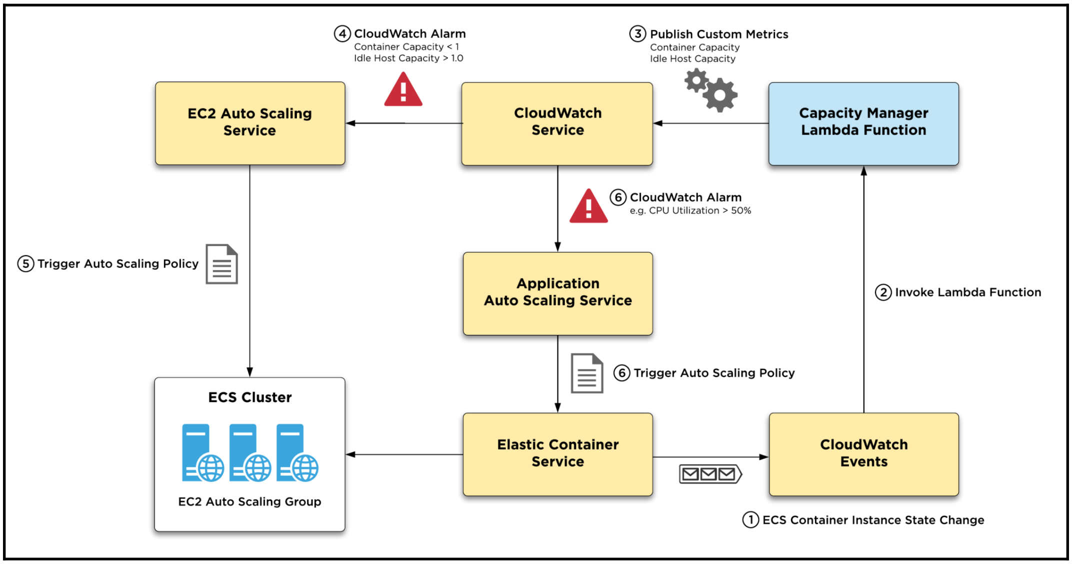

CloudWatch > Log Groups > /aws/lambda/todobackend-lifecycleHooks > 2018/05/03/[$LATEST]6beeb40437244f52ba7c3fa0b68532df
Expand all
● Row ○ Text
Filter events
all 30s 5m 1h 6h 1d 1w custom
Time (UTC +00:00)
Message

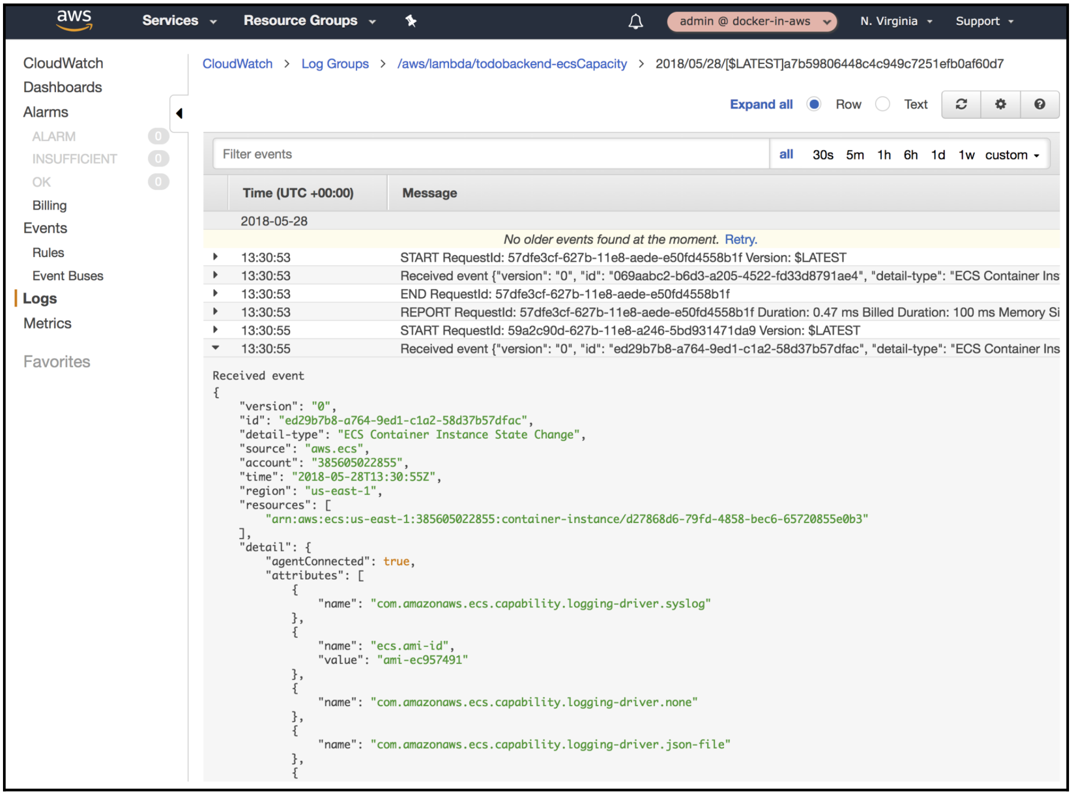
```
2018-05-03
12:19:39    START RequestId: 404468da-4ecc-11e8-9694-810dbe362b62 Version: $LATEST
12:19:39    Received event {'Records': [{'EventSource': 'aws:sns', 'EventVersion': '1.0', 'EventSubscriptionArn': 'arn:aws:sns:us-east-1:385605022855:todobackend-Lifecycle
12:19:39    Sleeping...
12:19:44    Sleeping...
12:19:49    Sleeping...
12:19:55    Sleeping...
12:20:00    Sleeping...
12:20:05    Sleeping...
12:20:10    Sleeping...
12:20:15    Sleeping...
12:20:20    Sleeping...
12:20:25    Sleeping...
12:20:30    Sleeping...
12:20:35    Sleeping...
12:20:40    Sleeping...
12:20:45    Sleeping...
12:20:50    Sleeping...
12:20:55    Sleeping...
12:21:00    Sleeping...
12:21:05    Sleeping...
12:21:10    Sleeping...
12:21:15    Sleeping...
12:21:20    Sleeping...
12:21:25    Sleeping...
12:21:30    Sleeping...
12:21:35    All tasks drained - sending CONTINUE signal
12:21:35    END RequestId: 404468da-4ecc-11e8-9694-810dbe362b62
12:21:35    REPORT RequestId: 404468da-4ecc-11e8-9694-810dbe362b62 Duration: 116432.79 ms Billed Duration: 116500 ms Memory Size: 128 MB Max Memory Used: 43
```


Spare
248 Units
ECS Task C
700 Units
ECS Task B
600 Units
ECS Task A
500 Units
ECS Container Instance
2048 CPU Units
Deployment Failure
Insufficient Resources
ECS Task D
400 Units


Currently can deploy
1 x ECS Task B
ECS Task B
400 Units
Spare
600 Units
ECS Task A
200 Units
ECS Task A
200 Units
ECS Container Instance
1000 CPU Units
Currently can deploy
1 x ECS Task B
ECS Task B
400 Units
Spare
600 Units
ECS Task B
400 Units
ECS Container Instance
1000 CPU Units


CPU Resources
Current spare capacity = 1 + 1 = 2
Currently can deploy
1 x ECS Task B
ECS Task B
400 Units
Spare
600 Units
ECS Task A
200 Units
ECS Task A
200 Units
ECS Container Instance
1000 CPU Units
Currently can deploy
1 x ECS Task B
ECS Task B
400 Units
Spare
600 Units
ECS Task B
400 Units
ECS Container Instance
1000 CPU Units
Memory Resources
Current spare capacity = 4 + 4 = 8
Currently can deploy
4 x ECS Task B
ECS Task B
200 MB
Spare
800 MB
ECS Task A
100 MB
ECS Task A
100 MB
ECS Container Instance
1000 MB
Currently can deploy
4 x ECS Task B
ECS Task B
200 MB
Spare
800 MB
ECS Task B
200 MB
ECS Container Instance
1000 MB

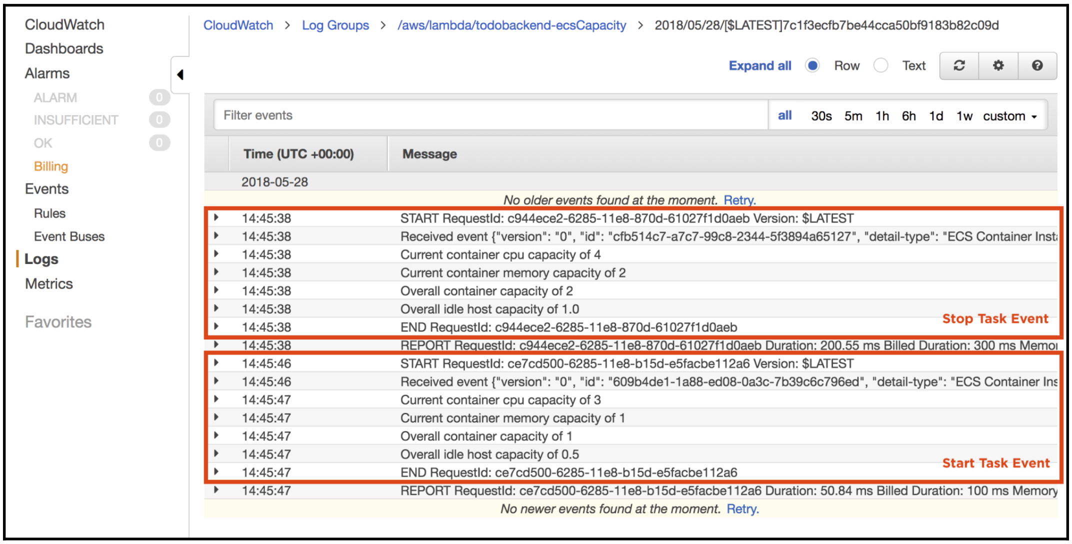

4 CloudWatch Alarm
Container Capacity < 1
Idle Host Capacity > 1.0
3 Publish Custom Metrics
Container Capacity
Idle Host Capacity
EC2 Auto Scaling Service
CloudWatch Service
Capacity Manager Lambda Function
6 CloudWatch Alarm
e.g. CPU Utilization > 50%
5 Trigger Auto Scaling Policy
Application Auto Scaling Service
2 Invoke Lambda Function
6 Trigger Auto Scaling Policy
ECS Cluster
EC2 Auto Scaling Group
Elastic Container Service
CloudWatch Events
1 ECS Container Instance State Change



CloudWatch > Log Groups > /aws/lambda/todobackend-ecsCapacity > 2018/05/28/[$LATEST]a7b59806448c4c949c7251efb0af60d7

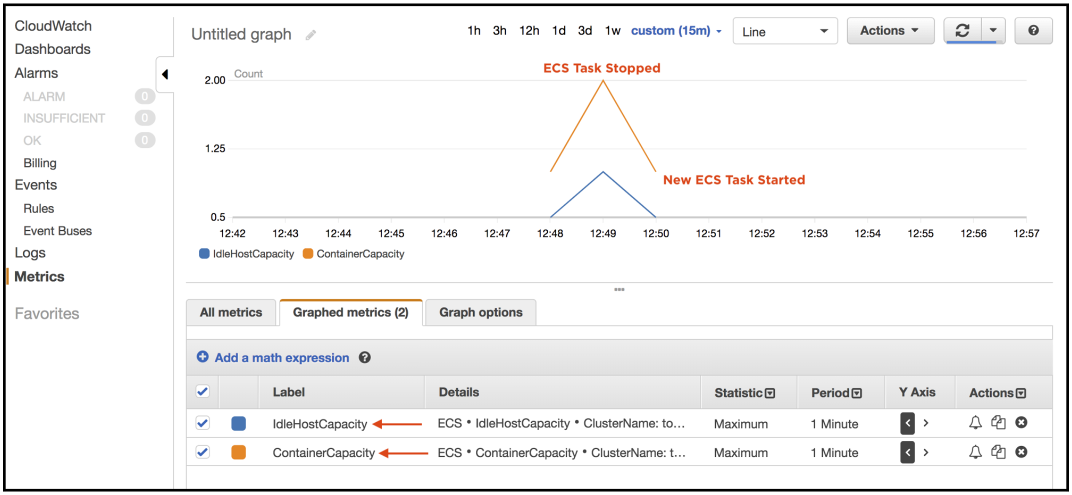
```
Time (UTC +00:00)   Message
2018-05-28
                    No older events found at the moment. Retry.
13:30:53            START RequestId: 57dfe3cf-627b-11e8-aede-e50fd4558b1f Version: $LATEST
13:30:53            Received event {"version": "0", "id": "069aabc2-b6d3-a205-4522-fd33d8791ae4", "detail-type": "ECS Container Ins
13:30:53            END RequestId: 57dfe3cf-627b-11e8-aede-e50fd4558b1f
13:30:53            REPORT RequestId: 57dfe3cf-627b-11e8-aede-e50fd4558b1f Duration: 0.47 ms Billed Duration: 100 ms Memory Si
13:30:55            START RequestId: 59a2c90d-627b-11e8-a246-5bd931471da9 Version: $LATEST
13:30:55            Received event {"version": "0", "id": "ed29b7b8-a764-9ed1-c1a2-58d37b57dfac", "detail-type": "ECS Container Ins
```

```
Received event
{
    "version": "0",
    "id": "ed29b7b8-a764-9ed1-c1a2-58d37b57dfac",
    "detail-type": "ECS Container Instance State Change",
    "source": "aws.ecs",
    "account": "385605022855",
    "time": "2018-05-28T13:30:55Z",
    "region": "us-east-1",
    "resources": [
        "arn:aws:ecs:us-east-1:385605022855:container-instance/d27868d6-79fd-4858-bec6-65720855e0b3"
    ],
    "detail": {
        "agentConnected": true,
        "attributes": [
            {
                "name": "com.amazonaws.ecs.capability.logging-driver.syslog"
            },
            {
                "name": "ecs.ami-id",
                "value": "ami-ec957491"
            },
            {
                "name": "com.amazonaws.ecs.capability.logging-driver.none"
            },
            {
                "name": "com.amazonaws.ecs.capability.logging-driver.json-file"
            },
            {
```

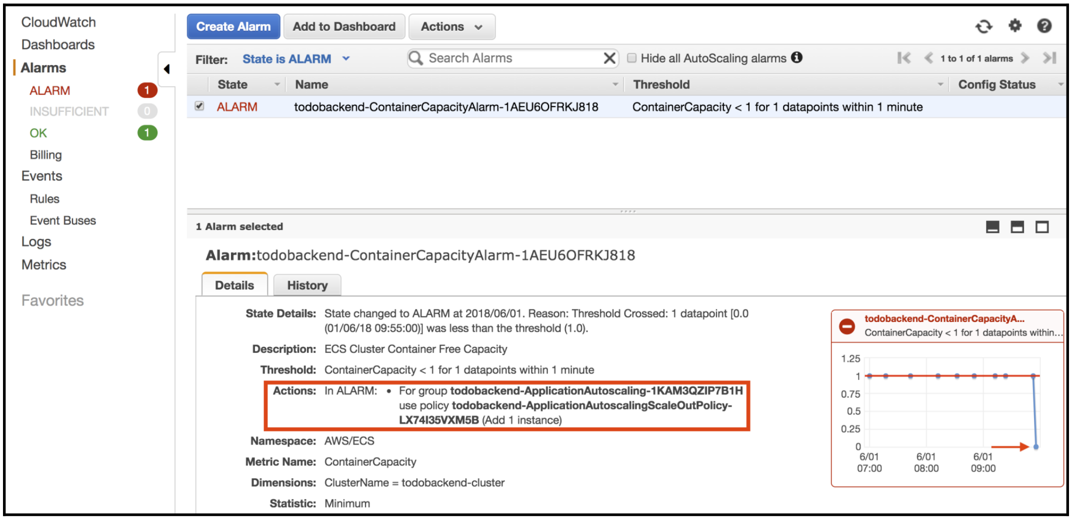


CloudWatch > Log Groups > /aws/lambda/todobackend-ecsCapacity > 2018/05/28/[$LATEST]7c1f3ecfb7be44cca50bf9183b82c09d

```
Time (UTC +00:00)   Message
2018-05-28
                    No older events found at the moment. Retry.
14:45:38            START RequestId: c944ece2-6285-11e8-870d-61027f1d0aeb Version: $LATEST
14:45:38            Received event {"version": "0", "id": "cfb514c7-a7c7-99c8-2344-5f3894a65127", "detail-type": "ECS Container Inst
14:45:38            Current container cpu capacity of 4
14:45:38            Current container memory capacity of 2
14:45:38            Overall container capacity of 2
14:45:38            Overall idle host capacity of 1.0
14:45:38            END RequestId: c944ece2-6285-11e8-870d-61027f1d0aeb
14:45:38            REPORT RequestId: c944ece2-6285-11e8-870d-61027f1d0aeb Duration: 200.55 ms Billed Duration: 300 ms Memoi
14:45:46            START RequestId: ce7cd500-6285-11e8-b15d-e5facbe112a6 Version: $LATEST
14:45:46            Received event {"version": "0", "id": "609b4de1-1a88-ed08-0a3c-7b39c6c796ed", "detail-type": "ECS Container Ins
14:45:47            Current container cpu capacity of 3
14:45:47            Current container memory capacity of 1
14:45:47            Overall container capacity of 1
14:45:47            Overall idle host capacity of 0.5
14:45:47            END RequestId: ce7cd500-6285-11e8-b15d-e5facbe112a6
14:45:47            REPORT RequestId: ce7cd500-6285-11e8-b15d-e5facbe112a6 Duration: 50.84 ms Billed Duration: 100 ms Memory
                    No newer events found at the moment. Retry.
```



☑		Label	Details	Statistic	Period	Y Axis	Actions
☑	🟦	IdleHostCapacity	ECS • IdleHostCapacity • ClusterName: to...	Maximum	1 Minute	‹ ›	
☑	🟧	ContainerCapacity	ECS • ContainerCapacity • ClusterName: t...	Maximum	1 Minute	‹ ›	



	State	Name	Threshold	Config Status
☑	ALARM	todobackend-ContainerCapacityAlarm-1AEU6OFRKJ818	ContainerCapacity < 1 for 1 datapoints within 1 minute	

1 Alarm selected

Alarm:todobackend-ContainerCapacityAlarm-1AEU6OFRKJ818

Details | History

State Details: State changed to ALARM at 2018/06/01. Reason: Threshold Crossed: 1 datapoint [0.0 (01/06/18 09:55:00)] was less than the threshold (1.0).

Description: ECS Cluster Container Free Capacity

Threshold: ContainerCapacity < 1 for 1 datapoints within 1 minute

Actions: In ALARM: • For group **todobackend-ApplicationAutoscaling-1KAM3QZIP7B1H** use policy **todobackend-ApplicationAutoscalingScaleOutPolicy-LX74I35VXM5B** (Add 1 instance)

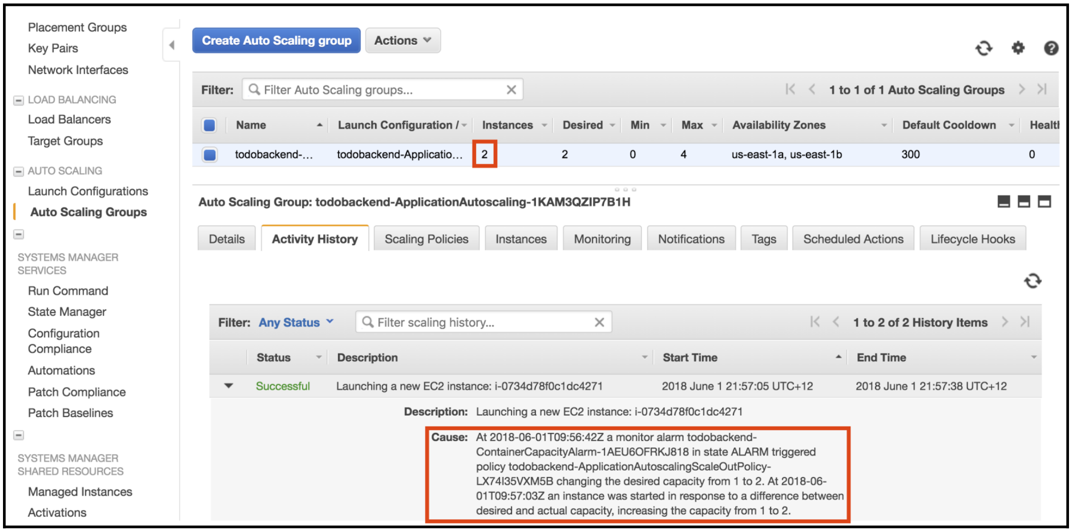
Namespace: AWS/ECS

Metric Name: ContainerCapacity

Dimensions: ClusterName = todobackend-cluster

Statistic: Minimum

todobackend-ContainerCapacityA...
ContainerCapacity < 1 for 1 datapoints within...
1.25
1
0.75
0.5
0.25
0
6/01 07:00
6/01 08:00
6/01 09:00



Filter: Filter Auto Scaling groups... 1 to 1 of 1 Auto Scaling Groups

Name	Launch Configuration /	Instances	Desired	Min	Max	Availability Zones	Default Cooldown	Healtl
todobackend-...	todobackend-Applicatio...	2	2	0	4	us-east-1a, us-east-1b	300	0

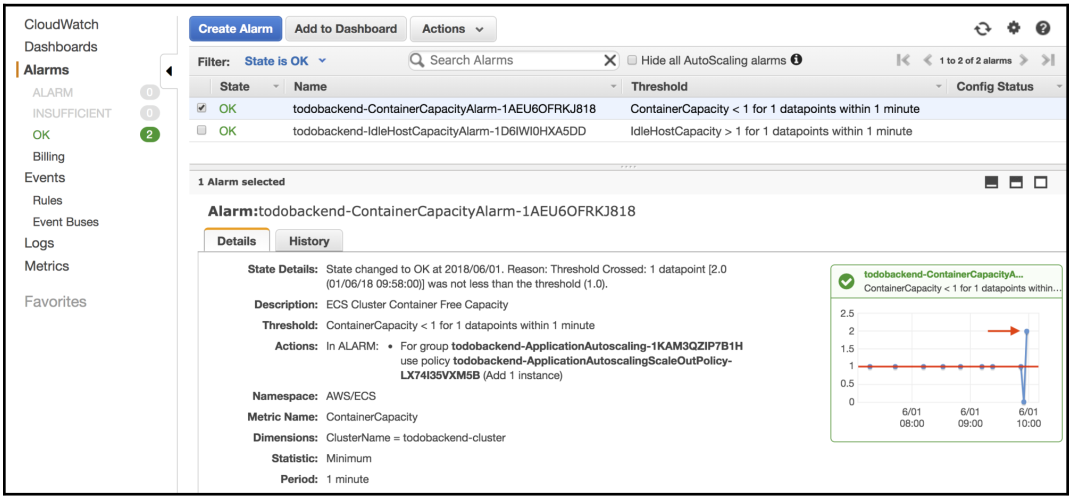
Auto Scaling Group: todobackend-ApplicationAutoscaling-1KAM3QZIP7B1H

Filter: Any Status Filter scaling history... 1 to 2 of 2 History Items

Status	Description	Start Time	End Time
Successful	Launching a new EC2 instance: i-0734d78f0c1dc4271	2018 June 1 21:57:05 UTC+12	2018 June 1 21:57:38 UTC+12

Description: Launching a new EC2 instance: i-0734d78f0c1dc4271

Cause: At 2018-06-01T09:56:42Z a monitor alarm todobackend-ContainerCapacityAlarm-1AEU6OFRKJ818 in state ALARM triggered policy todobackend-ApplicationAutoscalingScaleOutPolicy-LX74I35VXM5B changing the desired capacity from 1 to 2. At 2018-06-01T09:57:03Z an instance was started in response to a difference between desired and actual capacity, increasing the capacity from 1 to 2.



Filter: State is OK Search Alarms □ Hide all AutoScaling alarms 1 to 2 of 2 alarms

	State	Name	Threshold	Config Status
☑	OK	todobackend-ContainerCapacityAlarm-1AEU6OFRKJ818	ContainerCapacity < 1 for 1 datapoints within 1 minute	
□	OK	todobackend-IdleHostCapacityAlarm-1D6IWI0HXA5DD	IdleHostCapacity > 1 for 1 datapoints within 1 minute	

1 Alarm selected

Alarm:todobackend-ContainerCapacityAlarm-1AEU6OFRKJ818

State Details: State changed to OK at 2018/06/01. Reason: Threshold Crossed: 1 datapoint [2.0 (01/06/18 09:58:00)] was not less than the threshold (1.0).

Description: ECS Cluster Container Free Capacity

Threshold: ContainerCapacity < 1 for 1 datapoints within 1 minute

Actions: In ALARM:
- For group **todobackend-ApplicationAutoscaling-1KAM3QZIP7B1H** use policy **todobackend-ApplicationAutoscalingScaleOutPolicy-LX74I35VXM5B** (Add 1 instance)

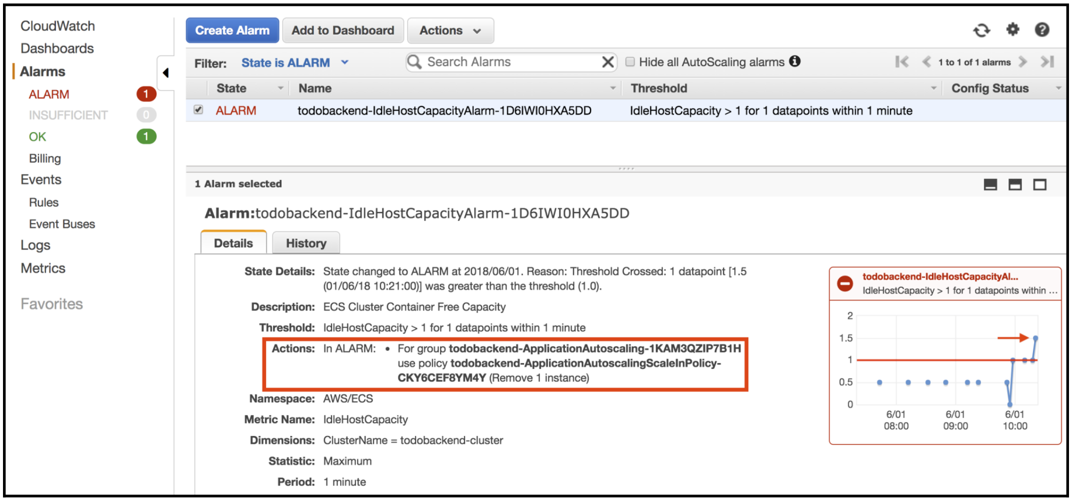
Namespace: AWS/ECS

Metric Name: ContainerCapacity

Dimensions: ClusterName = todobackend-cluster

Statistic: Minimum

Period: 1 minute



Filter: State is ALARM

☐ Hide all AutoScaling alarms

	State	Name	Threshold	Config Status
☑	ALARM	todobackend-IdleHostCapacityAlarm-1D6IWI0HXA5DD	IdleHostCapacity > 1 for 1 datapoints within 1 minute	

1 Alarm selected

Alarm:todobackend-IdleHostCapacityAlarm-1D6IWI0HXA5DD

State Details: State changed to ALARM at 2018/06/01. Reason: Threshold Crossed: 1 datapoint [1.5 (01/06/18 10:21:00)] was greater than the threshold (1.0).

Description: ECS Cluster Container Free Capacity

Threshold: IdleHostCapacity > 1 for 1 datapoints within 1 minute

Actions: In ALARM:
- For group **todobackend-ApplicationAutoscaling-1KAM3QZIP7B1H** use policy **todobackend-ApplicationAutoscalingScaleInPolicy-CKY6CEF8YM4Y** (Remove 1 instance)

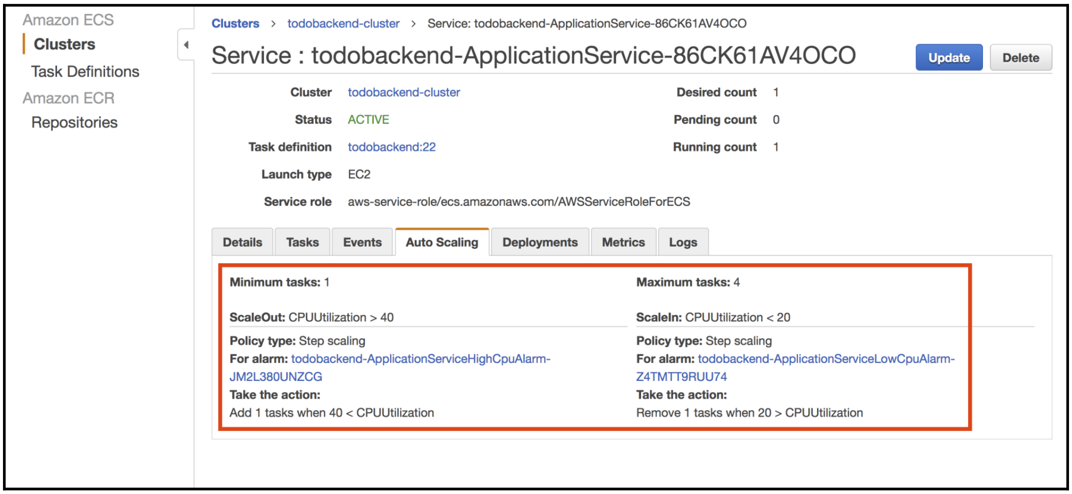
Namespace: AWS/ECS

Metric Name: IdleHostCapacity

Dimensions: ClusterName = todobackend-cluster

Statistic: Maximum

Period: 1 minute



Service : todobackend-ApplicationService-86CK61AV4OCO

Cluster	todobackend-cluster	Desired count	1
Status	ACTIVE	Pending count	0
Task definition	todobackend:22	Running count	1
Launch type	EC2		
Service role	aws-service-role/ecs.amazonaws.com/AWSServiceRoleForECS		

Minimum tasks: 1

Maximum tasks: 4

ScaleOut: CPUUtilization > 40

Policy type: Step scaling

For alarm: todobackend-ApplicationServiceHighCpuAlarm-JM2L380UNZCG

Take the action:

Add 1 tasks when 40 < CPUUtilization

ScaleIn: CPUUtilization < 20

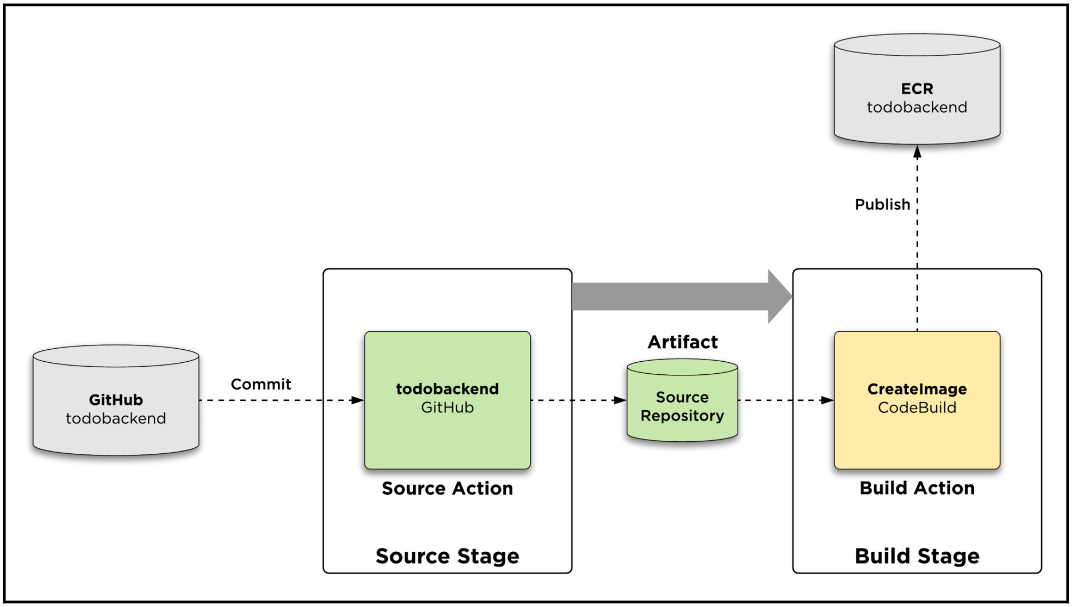
Policy type: Step scaling

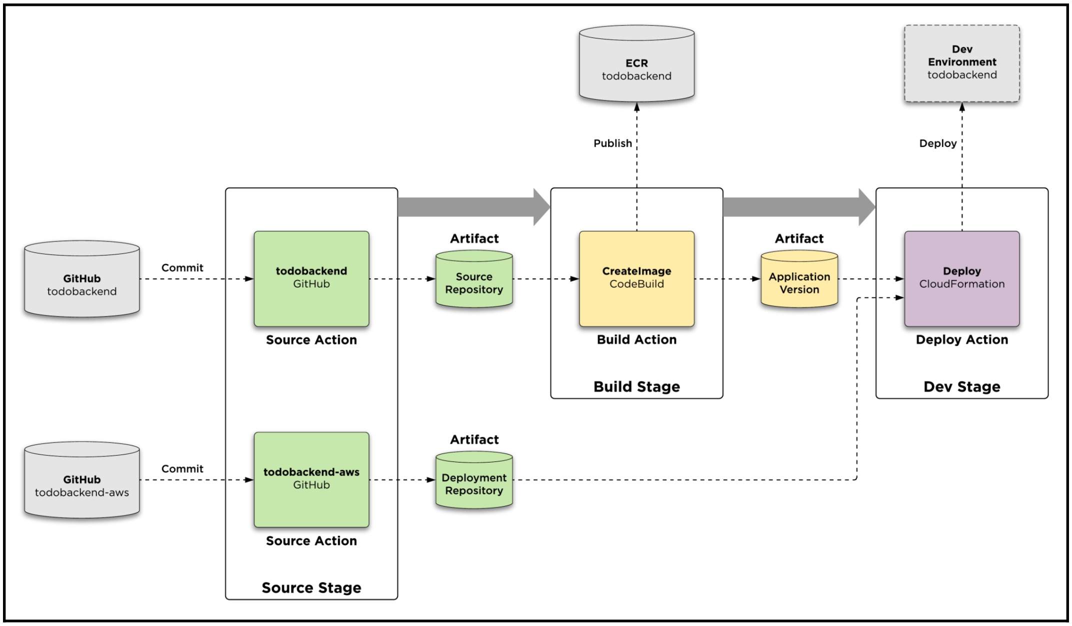
For alarm: todobackend-ApplicationServiceLowCpuAlarm-Z4TMTT9RUU74

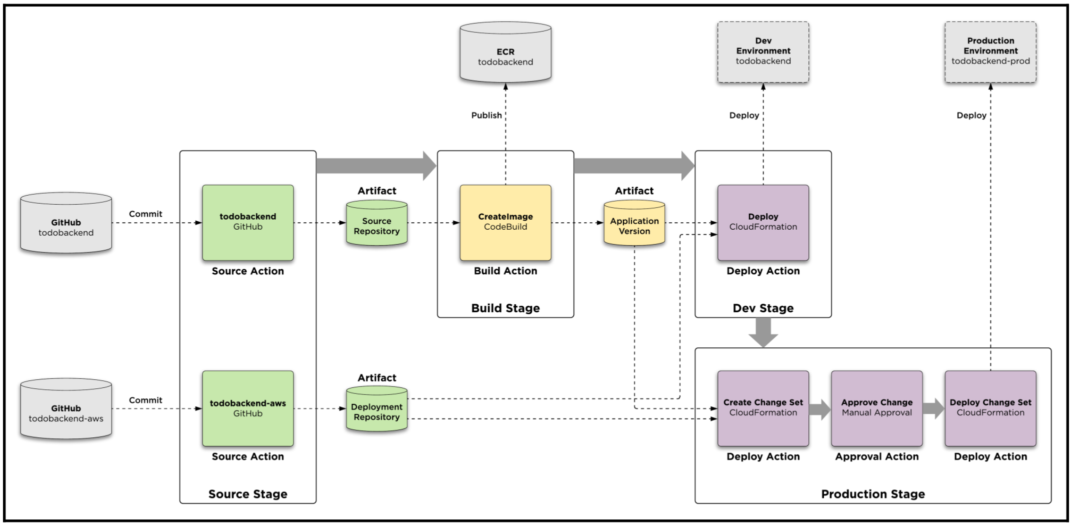
Take the action:

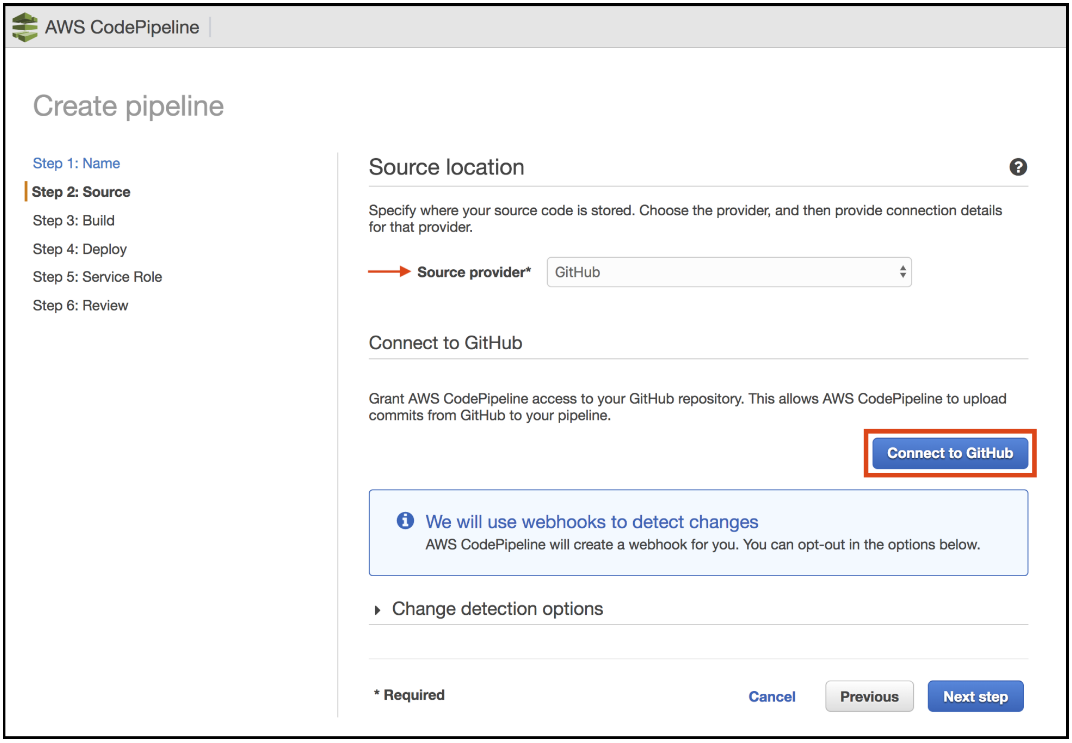
Remove 1 tasks when 20 > CPUUtilization

Chapter 13: Continuously Delivering ECS Applications




ECR
todobackend
Dev
Environment
todobackend
Publish
Deploy
GitHub
todobackend
Commit
todobackend
GitHub
Source Action
Artifact
Source
Repository
CreateImage
CodeBuild
Build Action
Build Stage
Artifact
Application
Version
Deploy
CloudFormation
Deploy Action
Dev Stage
GitHub
todobackend-aws
Commit
todobackend-aws
GitHub
Source Action
Artifact
Deployment
Repository
Source Stage


ECR
todobackend
Dev
Environment
todobackend
Production
Environment
todobackend-prod
Publish
Deploy
Deploy
GitHub
todobackend
Commit
todobackend
GitHub
Source Action
Artifact
Source
Repository
CreateImage
CodeBuild
Build Action
Build Stage
Artifact
Application
Version
Deploy
CloudFormation
Deploy Action
Dev Stage
GitHub
todobackend-aws
Commit
todobackend-aws
GitHub
Source Action
Source Stage
Artifact
Deployment
Repository
Create Change Set
CloudFormation
Deploy Action
Approve Change
Manual Approval
Approval Action
Deploy Change Set
CloudFormation
Deploy Action
Production Stage



AWS CodePipeline

Create pipeline

Step 1: Name
Step 2: Source
Step 3: Build
Step 4: Deploy
Step 5: Service Role
Step 6: Review

Source location

Specify where your source code is stored. Choose the provider, and then provide connection details for that provider.

Source provider* GitHub

Connect to GitHub

Grant AWS CodePipeline access to your GitHub repository. This allows AWS CodePipeline to upload commits from GitHub to your pipeline.

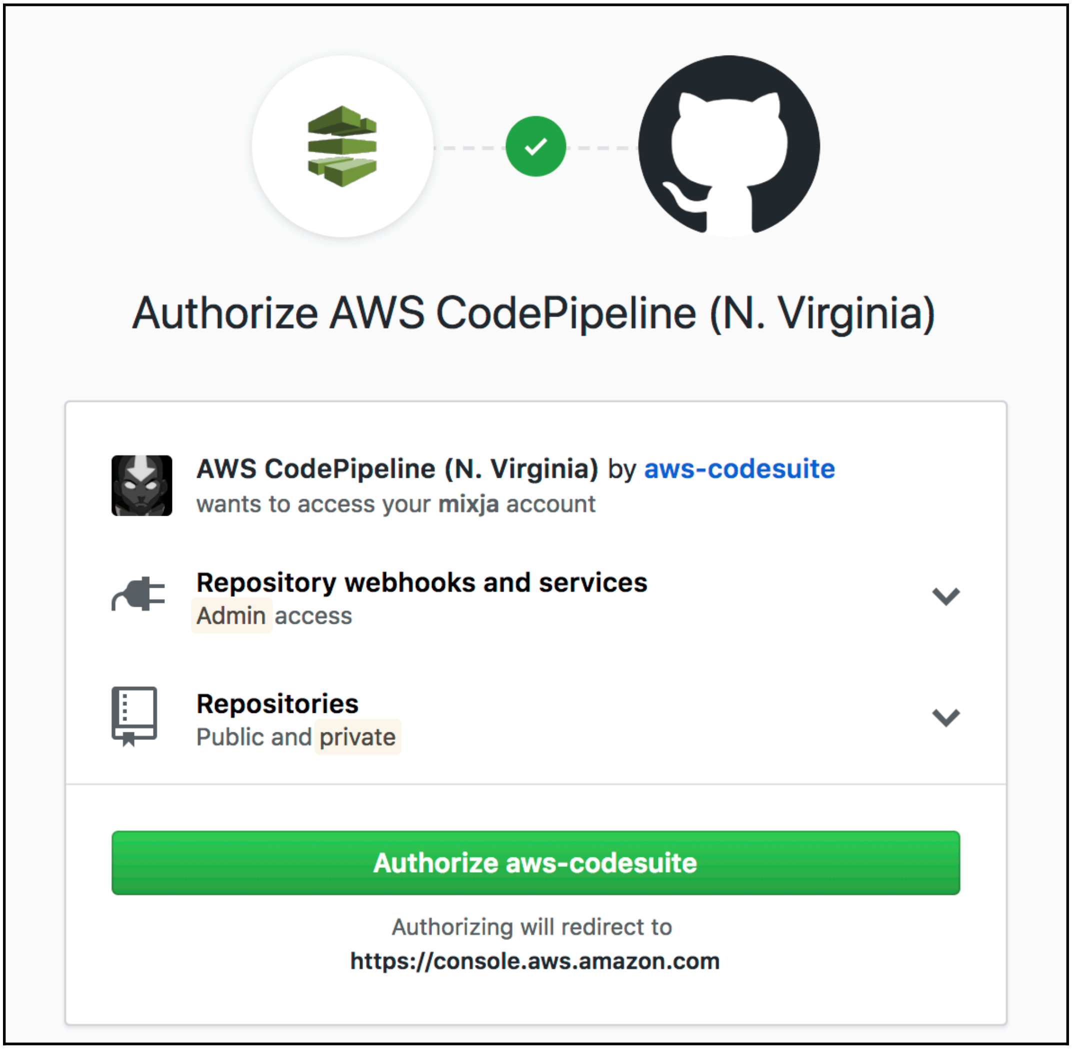
Connect to GitHub

We will use webhooks to detect changes
AWS CodePipeline will create a webhook for you. You can opt-out in the options below.

Change detection options

* Required

Cancel Previous Next step



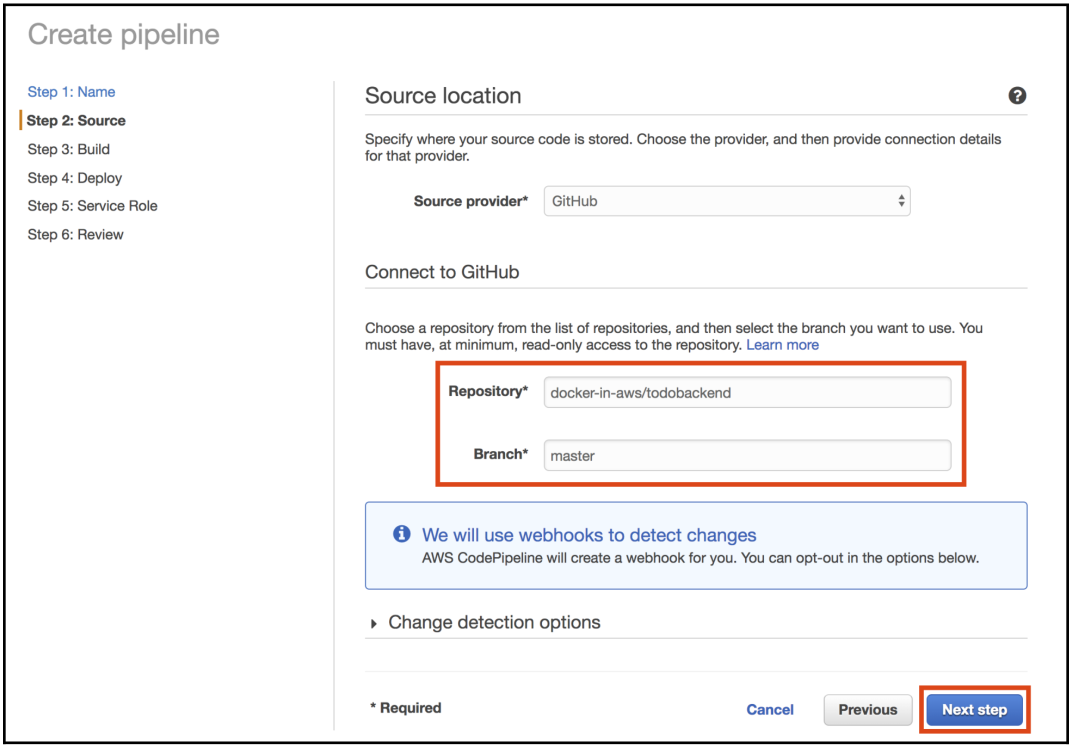
Authorize AWS CodePipeline (N. Virginia)

AWS CodePipeline (N. Virginia) by **aws-codesuite**
wants to access your **mixja** account

Repository webhooks and services
Admin access

Repositories
Public and private

Authorizing will redirect to
https://console.aws.amazon.com



Create pipeline

Source location

Specify where your source code is stored. Choose the provider, and then provide connection details for that provider.

Source provider* GitHub

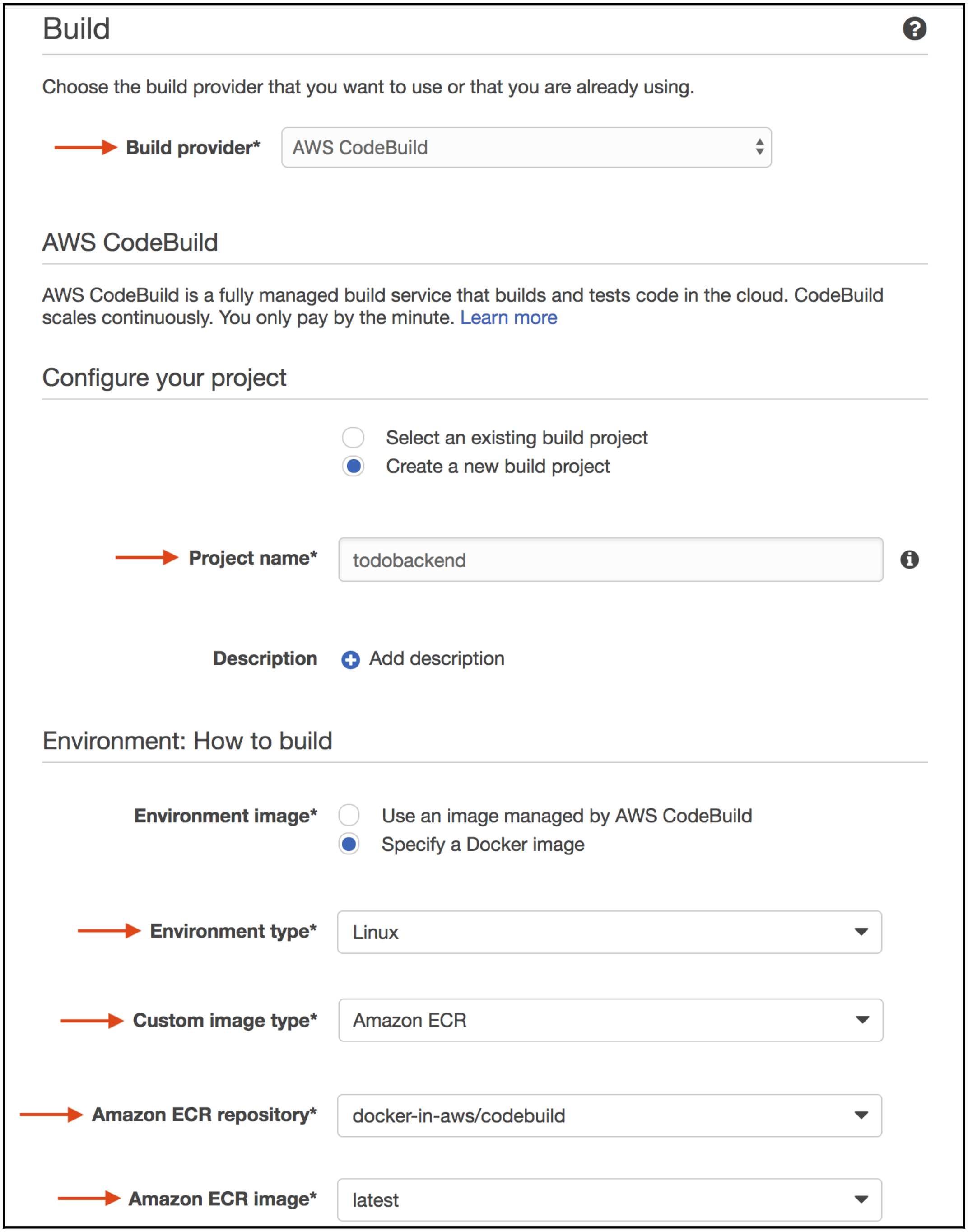
Connect to GitHub

Choose a repository from the list of repositories, and then select the branch you want to use. You must have, at minimum, read-only access to the repository. Learn more

Repository* docker-in-aws/todobackend

Branch* master

We will use webhooks to detect changes
AWS CodePipeline will create a webhook for you. You can opt-out in the options below.



Build

Choose the build provider that you want to use or that you are already using.

Build provider* AWS CodeBuild

AWS CodeBuild

AWS CodeBuild is a fully managed build service that builds and tests code in the cloud. CodeBuild scales continuously. You only pay by the minute. Learn more

Configure your project

○ Select an existing build project
● Create a new build project

Project name* todobackend

Description Add description

Environment: How to build

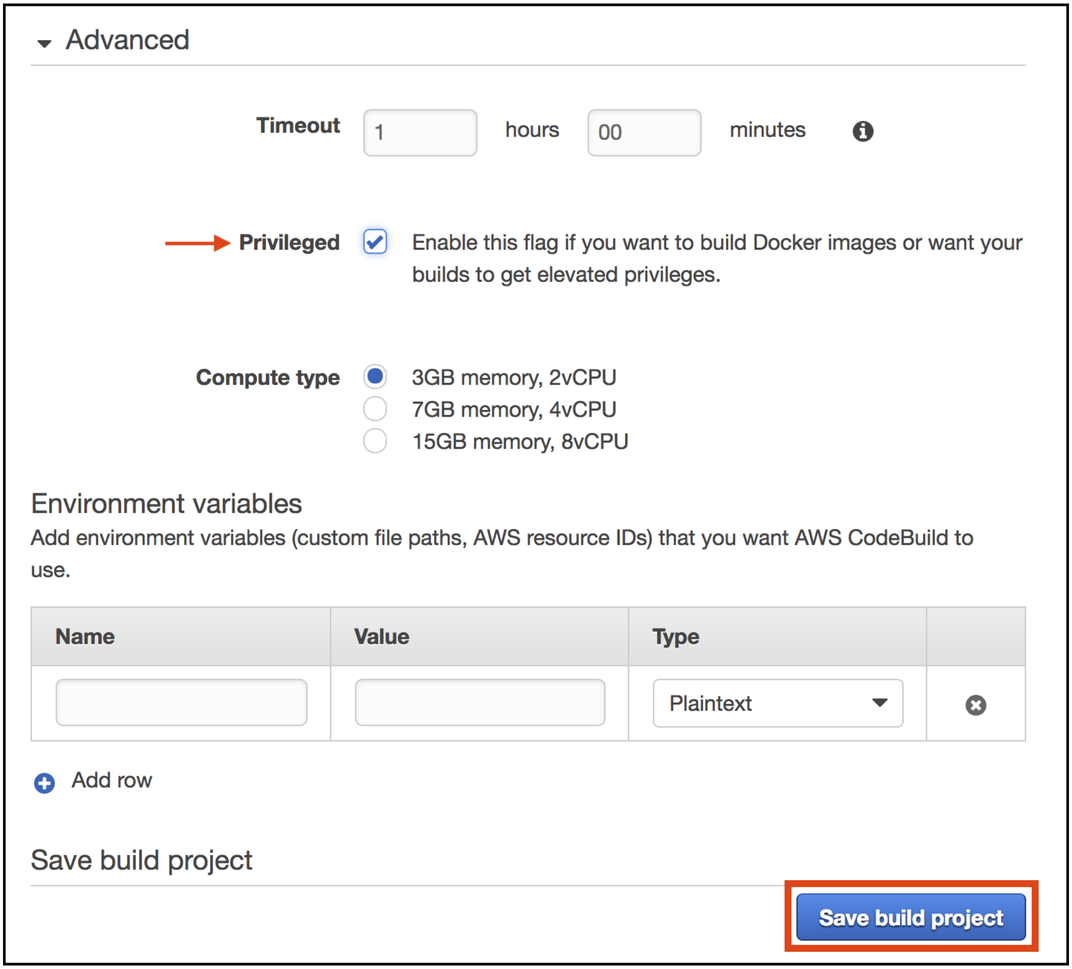
Environment image* ○ Use an image managed by AWS CodeBuild
● Specify a Docker image

Environment type* Linux

Custom image type* Amazon ECR

Amazon ECR repository* docker-in-aws/codebuild

Amazon ECR image* latest



Advanced

Timeout 1 hours 00 minutes

Privileged ☑ Enable this flag if you want to build Docker images or want your builds to get elevated privileges.

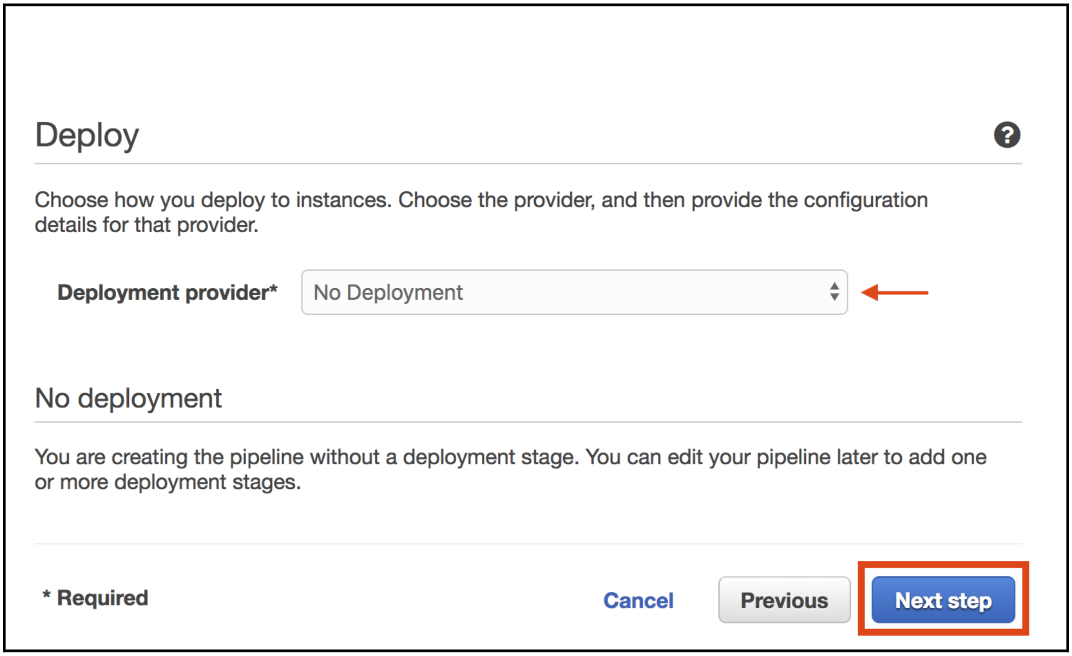
Compute type
● 3GB memory, 2vCPU
○ 7GB memory, 4vCPU
○ 15GB memory, 8vCPU

Environment variables

Add environment variables (custom file paths, AWS resource IDs) that you want AWS CodeBuild to use.

Name	Value	Type	
		Plaintext	☒

Save build project



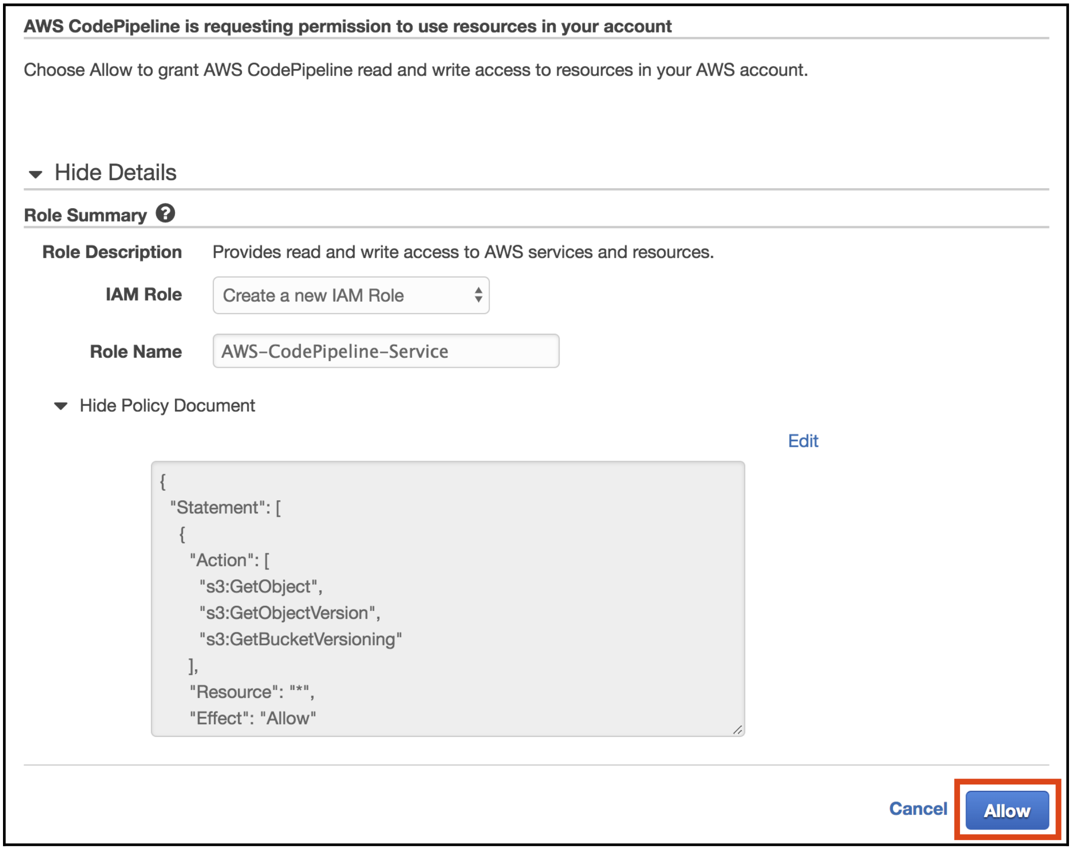
Deploy

Choose how you deploy to instances. Choose the provider, and then provide the configuration details for that provider.

Deployment provider* No Deployment

No deployment

You are creating the pipeline without a deployment stage. You can edit your pipeline later to add one or more deployment stages.



AWS CodePipeline is requesting permission to use resources in your account

Choose Allow to grant AWS CodePipeline read and write access to resources in your AWS account.

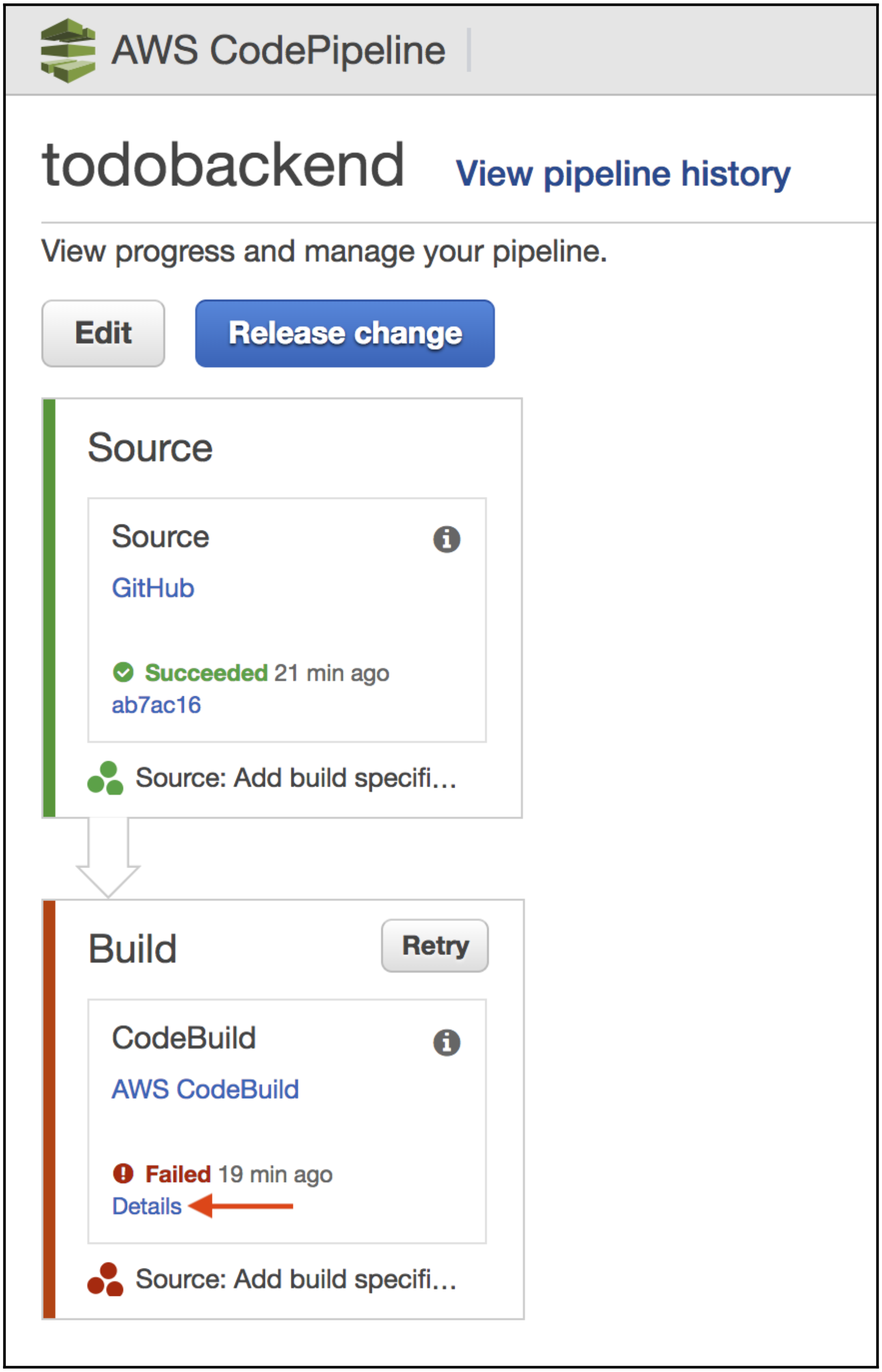
Role Summary

Role Description Provides read and write access to AWS services and resources.

IAM Role Create a new IAM Role

Role Name AWS-CodePipeline-Service

```
{
 "Statement": [
  {
   "Action": [
    "s3:GetObject",
    "s3:GetObjectVersion",
    "s3:GetBucketVersioning"
   ],
   "Resource": "*",
   "Effect": "Allow"
```


AWS CodePipeline

todobackend View pipeline history

View progress and manage your pipeline.

Source

Source
GitHub

✓ Succeeded 21 min ago
ab7ac16

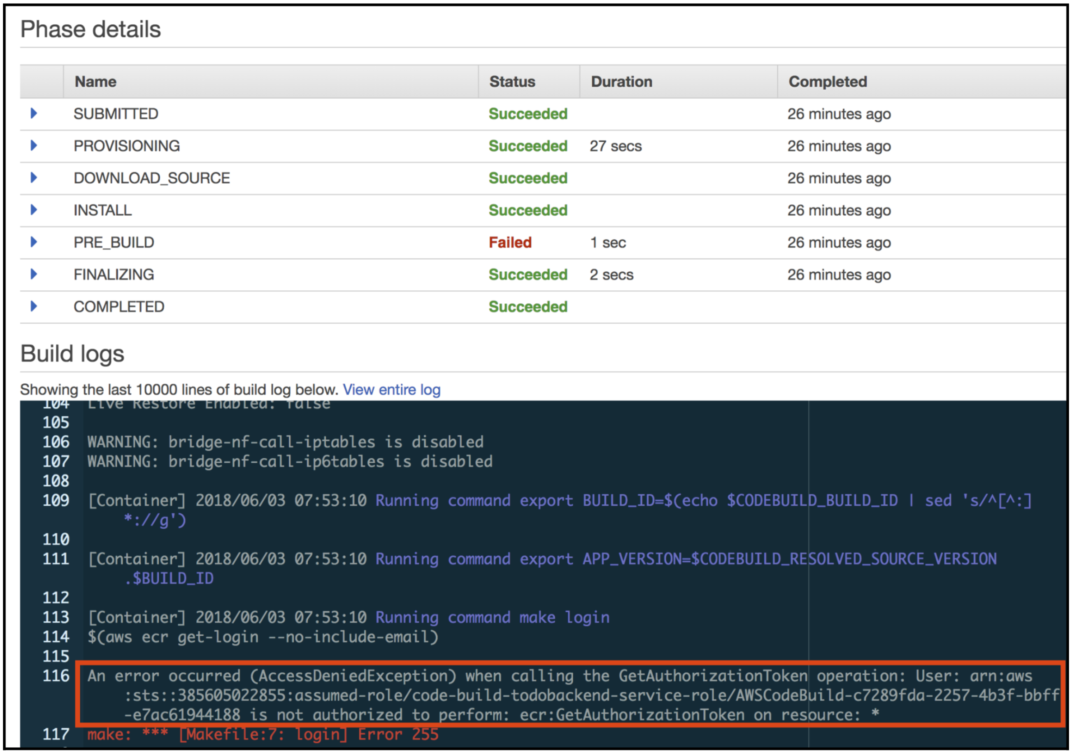
Source: Add build specifi...

Build

CodeBuild
AWS CodeBuild

! Failed 19 min ago
Details

Source: Add build specifi...



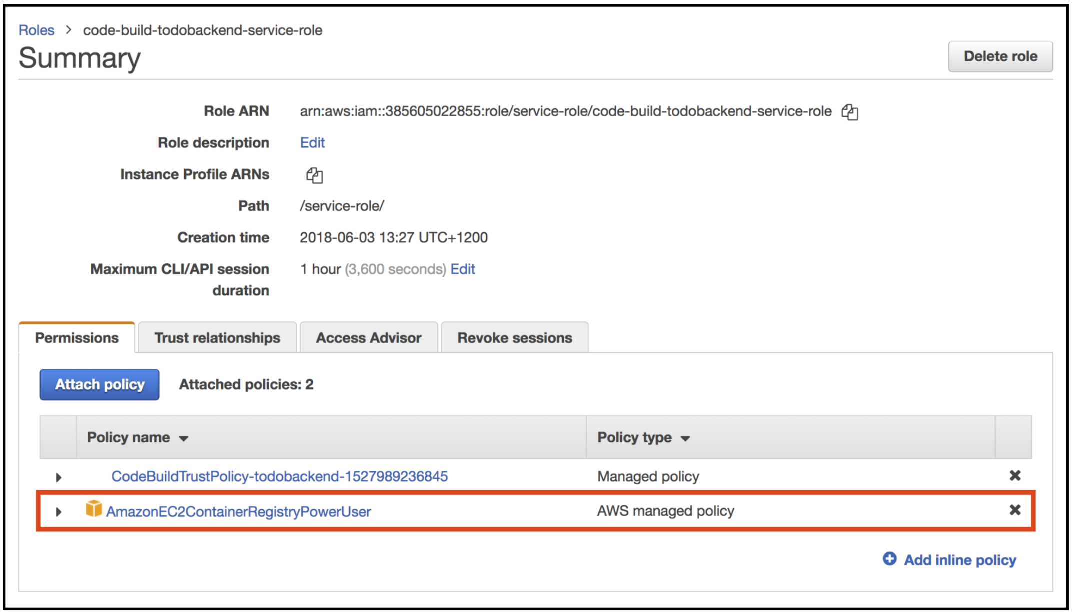
Phase details

	Name	Status	Duration	Completed
▶	SUBMITTED	Succeeded		26 minutes ago
▶	PROVISIONING	Succeeded	27 secs	26 minutes ago
▶	DOWNLOAD_SOURCE	Succeeded		26 minutes ago
▶	INSTALL	Succeeded		26 minutes ago
▶	PRE_BUILD	Failed	1 sec	26 minutes ago
▶	FINALIZING	Succeeded	2 secs	26 minutes ago
▶	COMPLETED	Succeeded		

Build logs

Showing the last 10000 lines of build log below. View entire log

```
Live Restore Enabled: false

WARNING: bridge-nf-call-iptables is disabled
WARNING: bridge-nf-call-ip6tables is disabled

[Container] 2018/06/03 07:53:10 Running command export BUILD_ID=$(echo $CODEBUILD_BUILD_ID | sed 's/^[^:]
    *://g')

[Container] 2018/06/03 07:53:10 Running command export APP_VERSION=$CODEBUILD_RESOLVED_SOURCE_VERSION
    .$BUILD_ID

[Container] 2018/06/03 07:53:10 Running command make login
$(aws ecr get-login --no-include-email)

An error occurred (AccessDeniedException) when calling the GetAuthorizationToken operation: User: arn:aws
    :sts::385605022855:assumed-role/code-build-todobackend-service-role/AWSCodeBuild-c7289fda-2257-4b3f-bbff
    -e7ac61944188 is not authorized to perform: ecr:GetAuthorizationToken on resource: *
make: *** [Makefile:7: login] Error 255
```



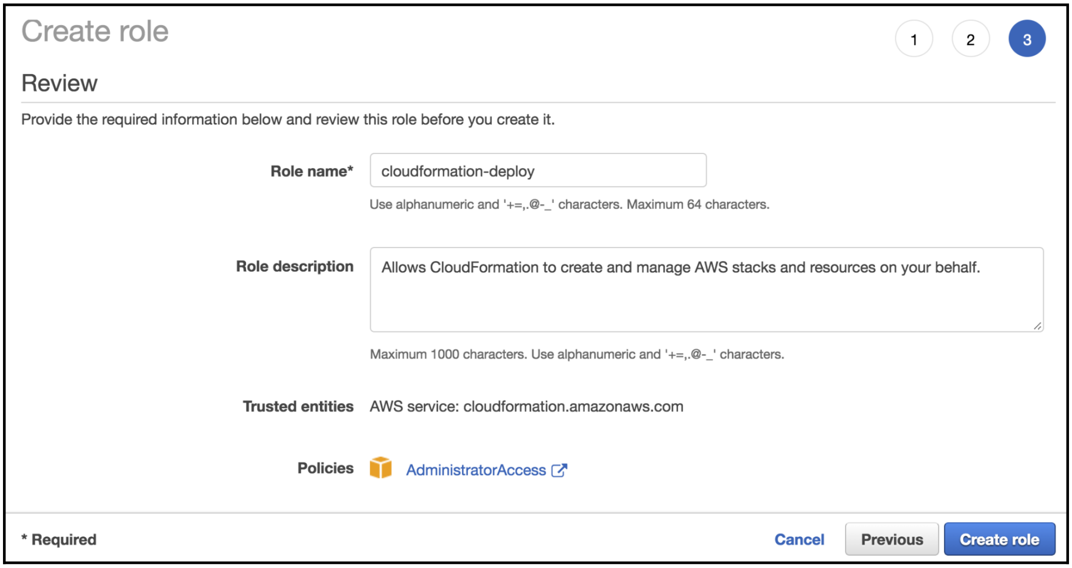
Roles > code-build-todobackend-service-role

Summary

Role ARN	arn:aws:iam::385605022855:role/service-role/code-build-todobackend-service-role
Role description	Edit
Instance Profile ARNs	
Path	/service-role/
Creation time	2018-06-03 13:27 UTC+1200
Maximum CLI/API session duration	1 hour (3,600 seconds) Edit

Attached policies: 2

	Policy name	Policy type	
▶	CodeBuildTrustPolicy-todobackend-1527989236845	Managed policy	✖
▶	AmazonEC2ContainerRegistryPowerUser	AWS managed policy	✖



Review

Provide the required information below and review this role before you create it.

Role name* cloudformation-deploy

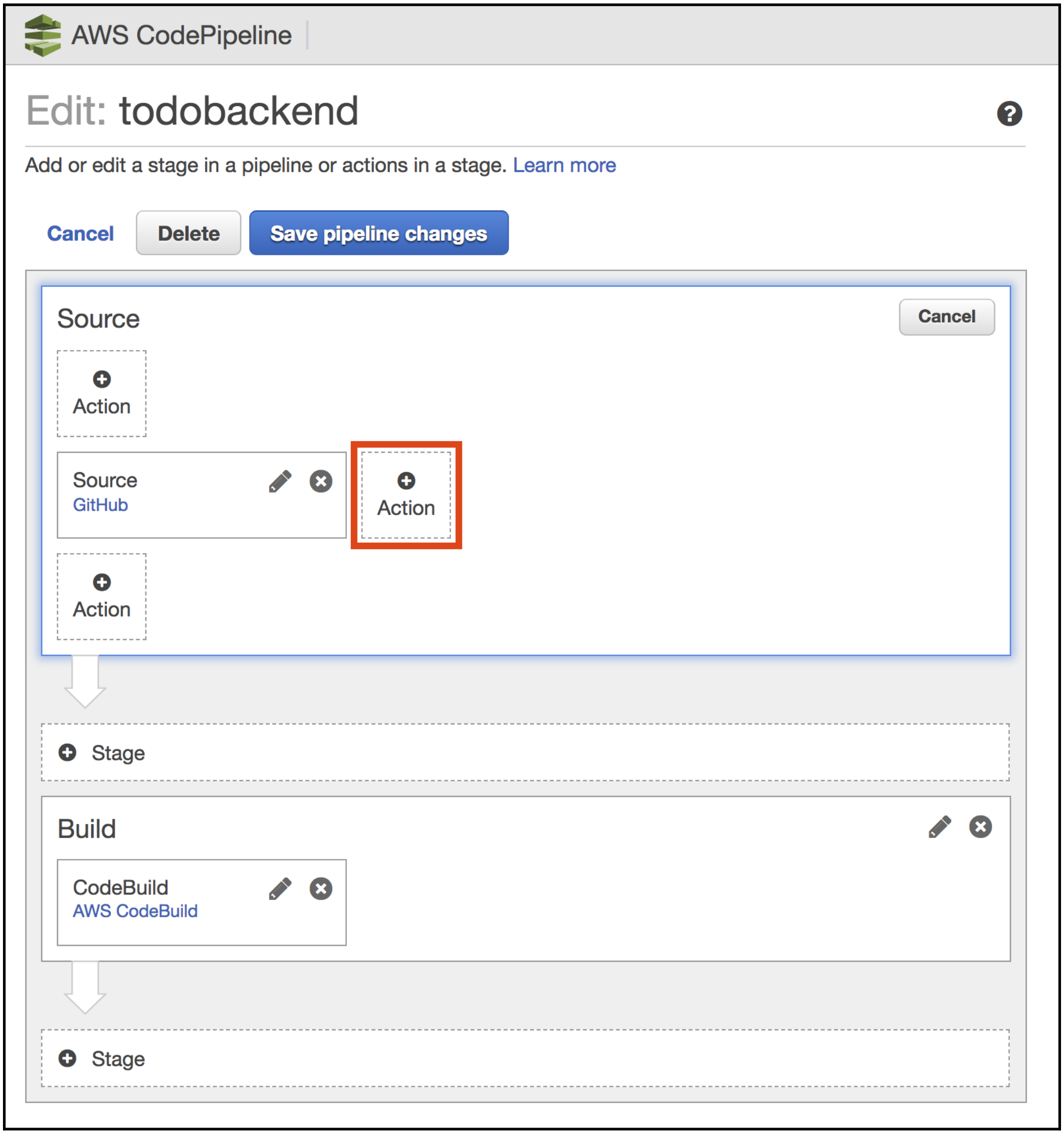
Use alphanumeric and '+=,.@-_' characters. Maximum 64 characters.

Role description Allows CloudFormation to create and manage AWS stacks and resources on your behalf.

Maximum 1000 characters. Use alphanumeric and '+=,.@-_' characters.

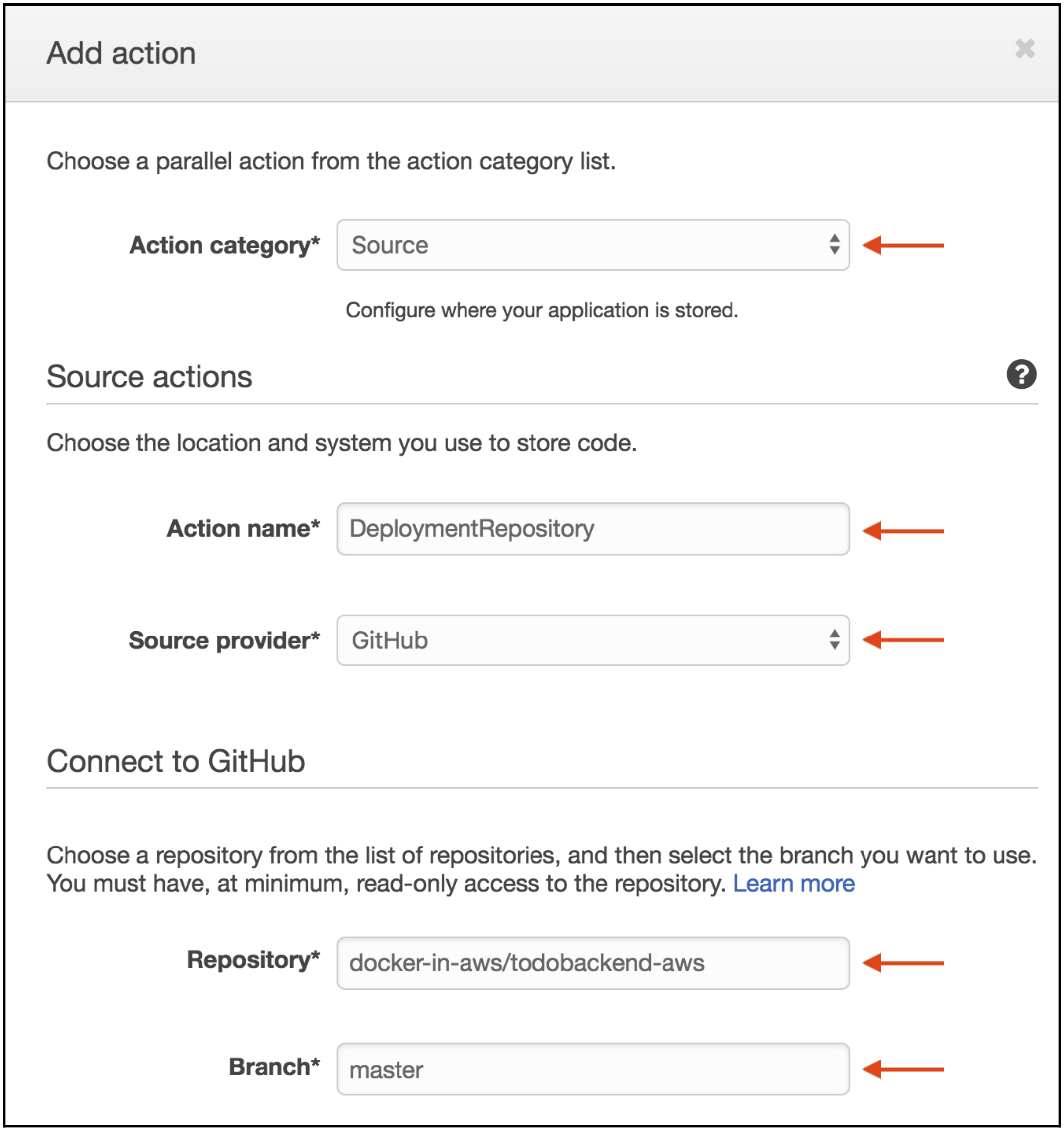
Trusted entities AWS service: cloudformation.amazonaws.com

Policies AdministratorAccess



Edit: todobackend

Add or edit a stage in a pipeline or actions in a stage. Learn more



Add action

Choose a parallel action from the action category list.

Action category* Source

Configure where your application is stored.

Source actions

Choose the location and system you use to store code.

Action name* DeploymentRepository

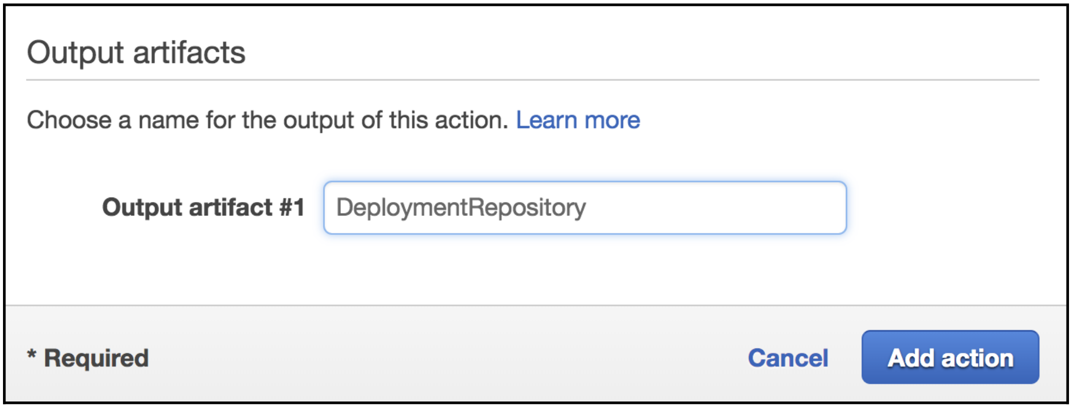
Source provider* GitHub

Connect to GitHub

Choose a repository from the list of repositories, and then select the branch you want to use. You must have, at minimum, read-only access to the repository. Learn more

Repository* docker-in-aws/todobackend-aws

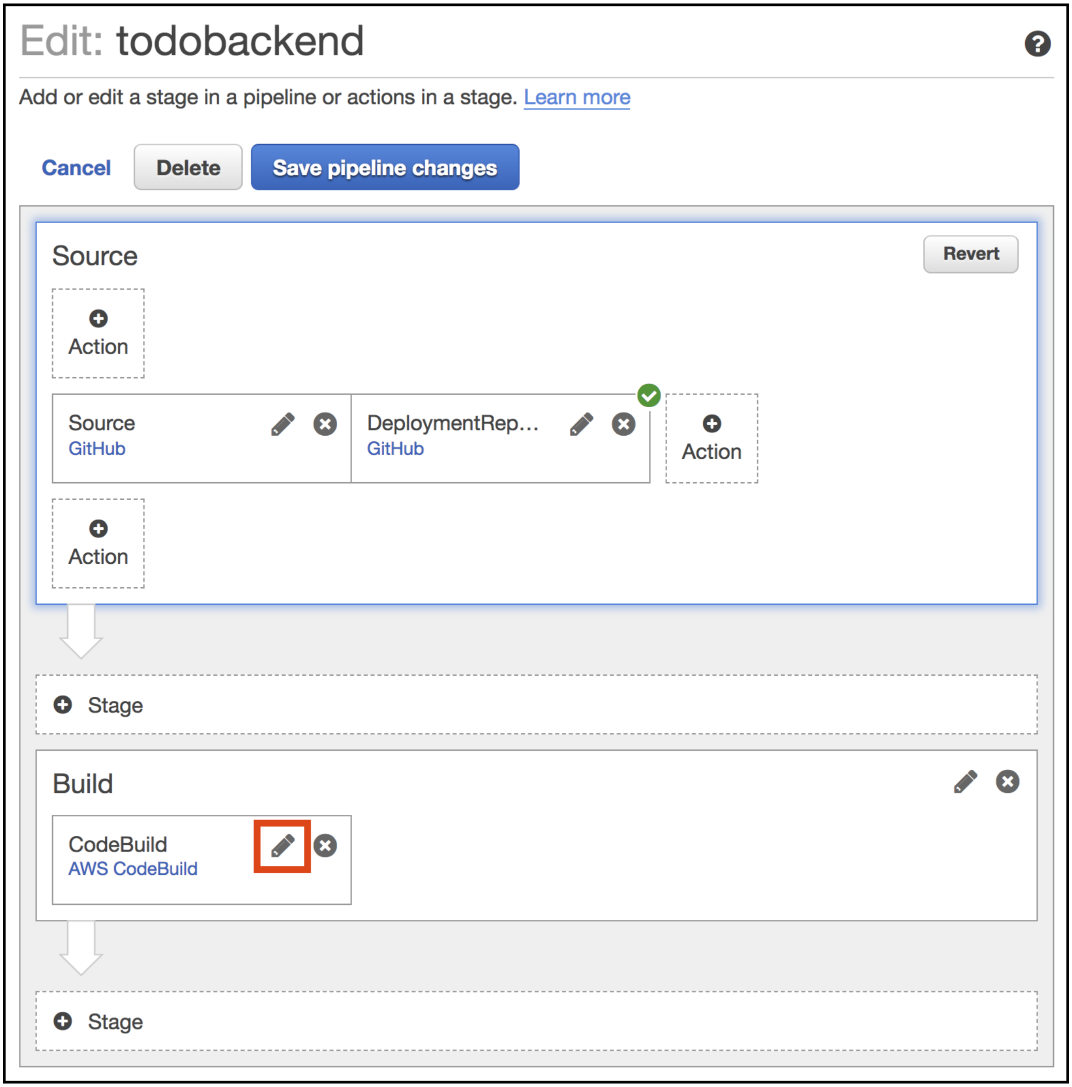
Branch* master



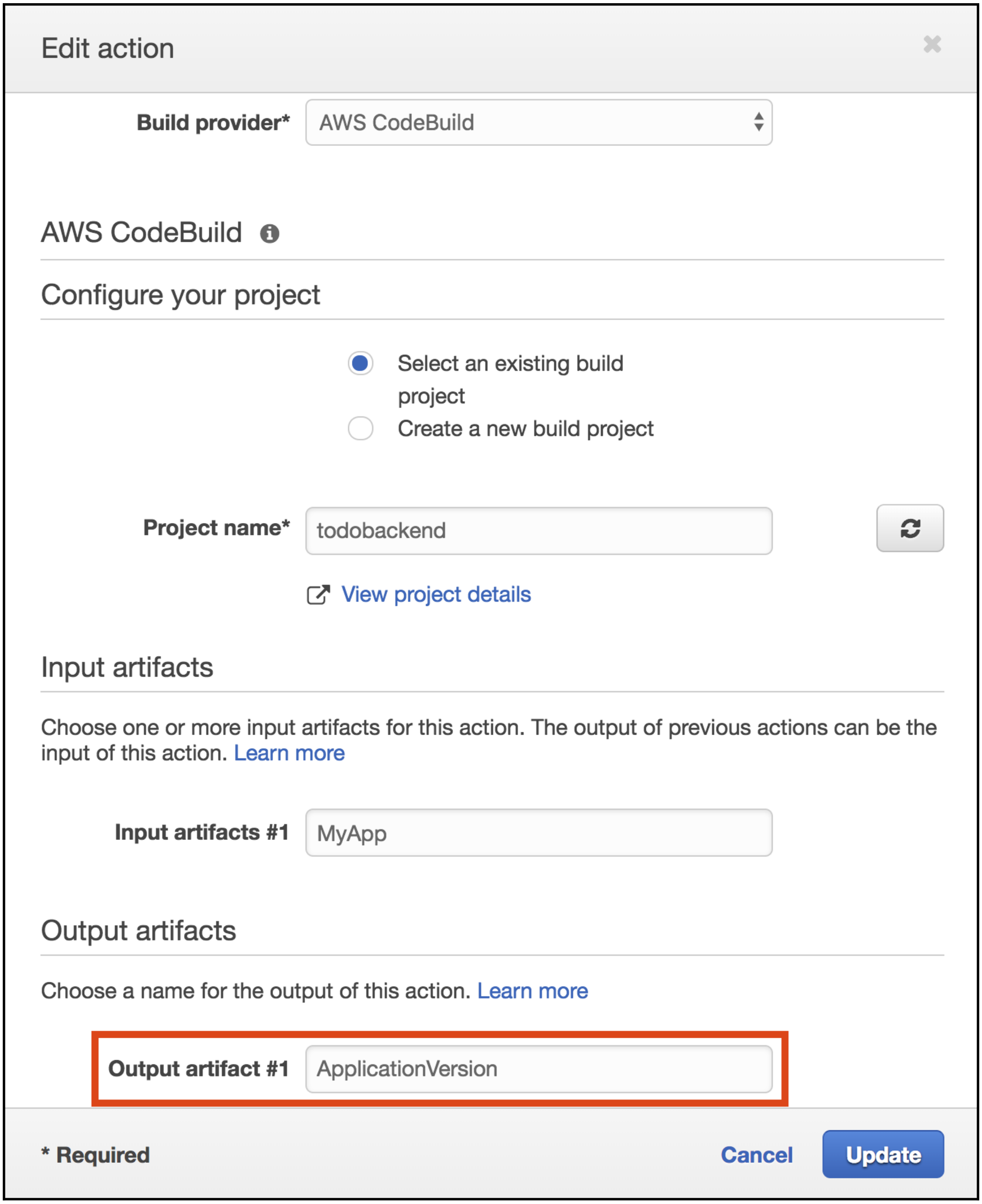
Output artifacts

Choose a name for the output of this action. Learn more

Output artifact #1: DeploymentRepository



Edit: todobackend
Add or edit a stage in a pipeline or actions in a stage. Learn more
Cancel
Delete
Save pipeline changes
Source
Revert
Action
Source
GitHub
DeploymentRep…
GitHub
Action
Action
Stage
Build
CodeBuild
AWS CodeBuild
Stage



Edit action

Build provider* AWS CodeBuild

AWS CodeBuild

Configure your project

● Select an existing build project
○ Create a new build project

Project name* todobackend

View project details

Input artifacts

Choose one or more input artifacts for this action. The output of previous actions can be the input of this action. Learn more

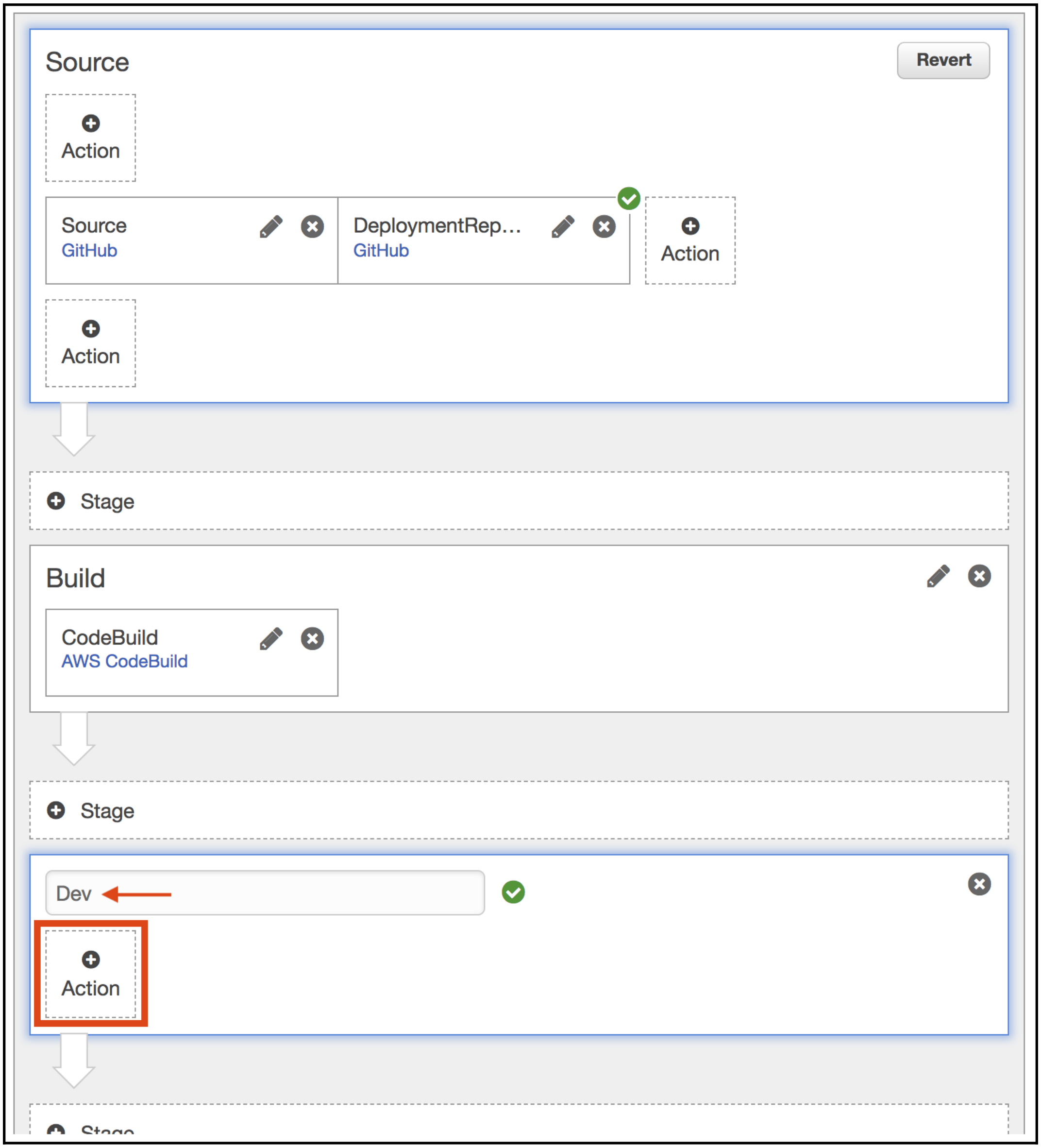
Input artifacts #1 MyApp

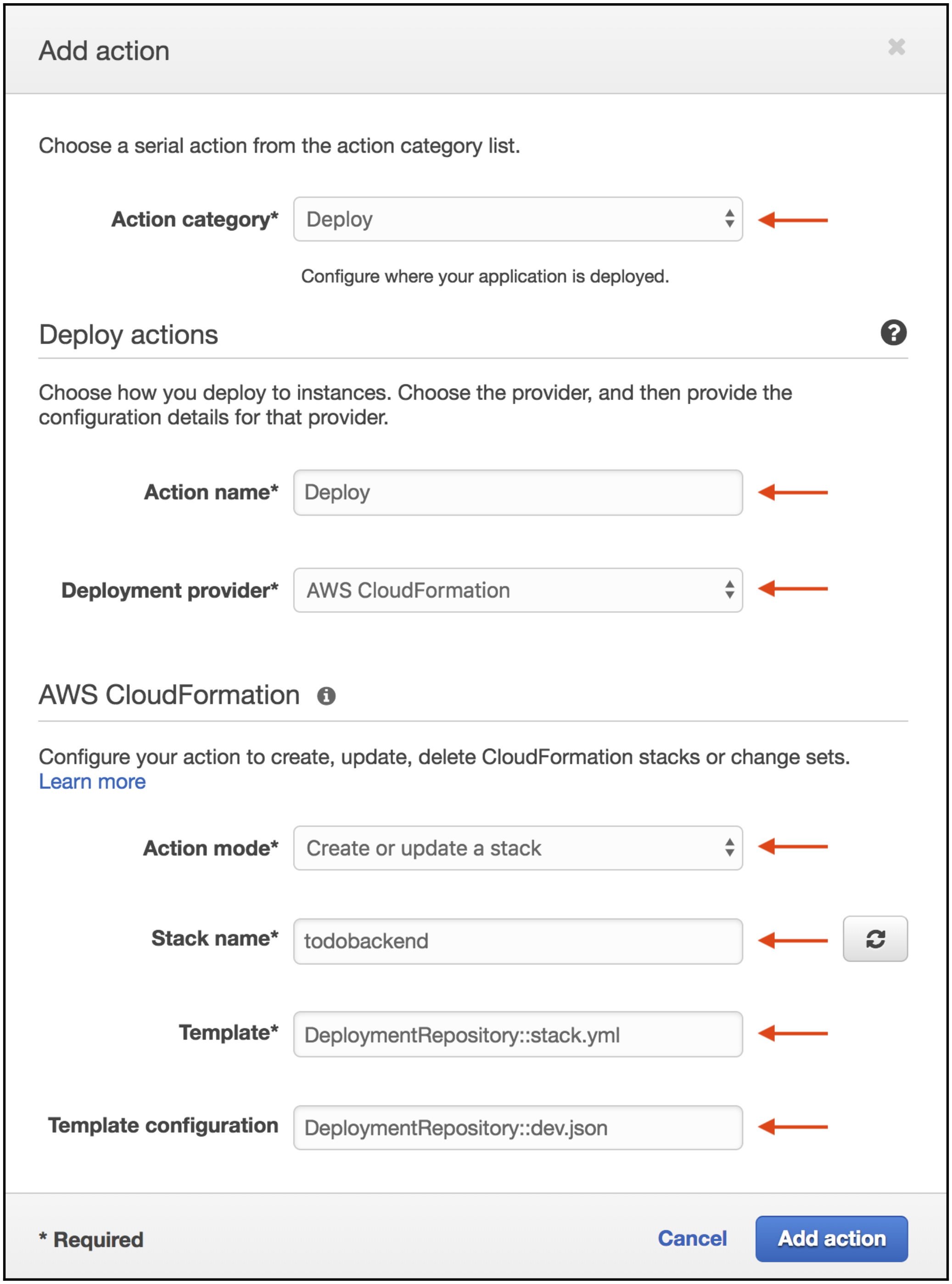
Output artifacts

Choose a name for the output of this action. Learn more

Output artifact #1 ApplicationVersion

*** Required**


Source
Revert
Action
Source
GitHub
DeploymentRep…
GitHub
Action
Action
Stage
Build
CodeBuild
AWS CodeBuild
Stage
Dev
Action
Stage



Add action

Choose a serial action from the action category list.

Action category* Deploy

Configure where your application is deployed.

Deploy actions

Choose how you deploy to instances. Choose the provider, and then provide the configuration details for that provider.

Action name* Deploy

Deployment provider* AWS CloudFormation

AWS CloudFormation

Configure your action to create, update, delete CloudFormation stacks or change sets.
Learn more

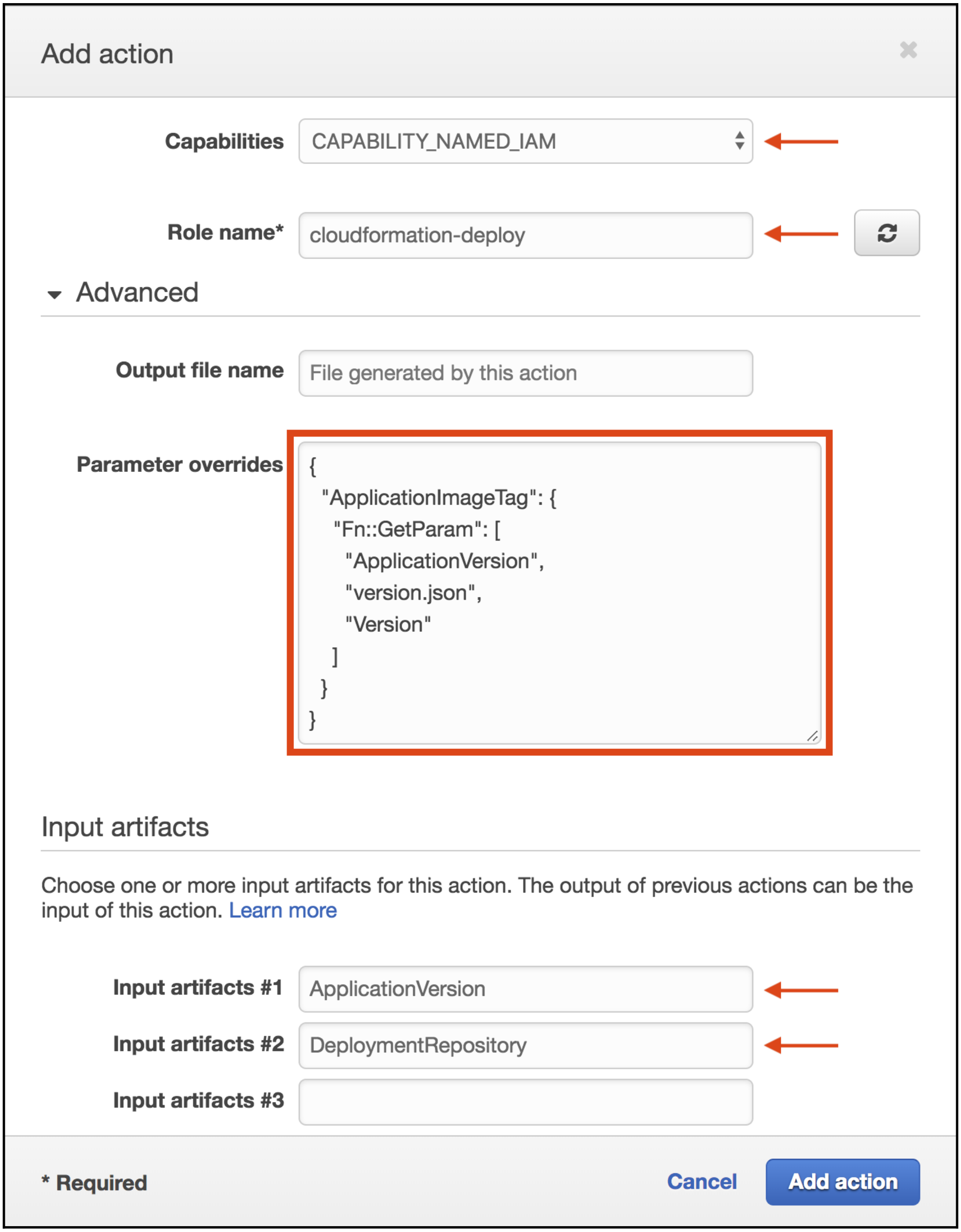
Action mode* Create or update a stack

Stack name* todobackend

Template* DeploymentRepository::stack.yml

Template configuration DeploymentRepository::dev.json

*** Required**



Capabilities: CAPABILITY_NAMED_IAM

Role name*: cloudformation-deploy

Advanced

Output file name: File generated by this action

Parameter overrides:

```
{
 "ApplicationImageTag": {
  "Fn::GetParam": [
   "ApplicationVersion",
   "version.json",
   "Version"
  ]
 }
}
```

Input artifacts

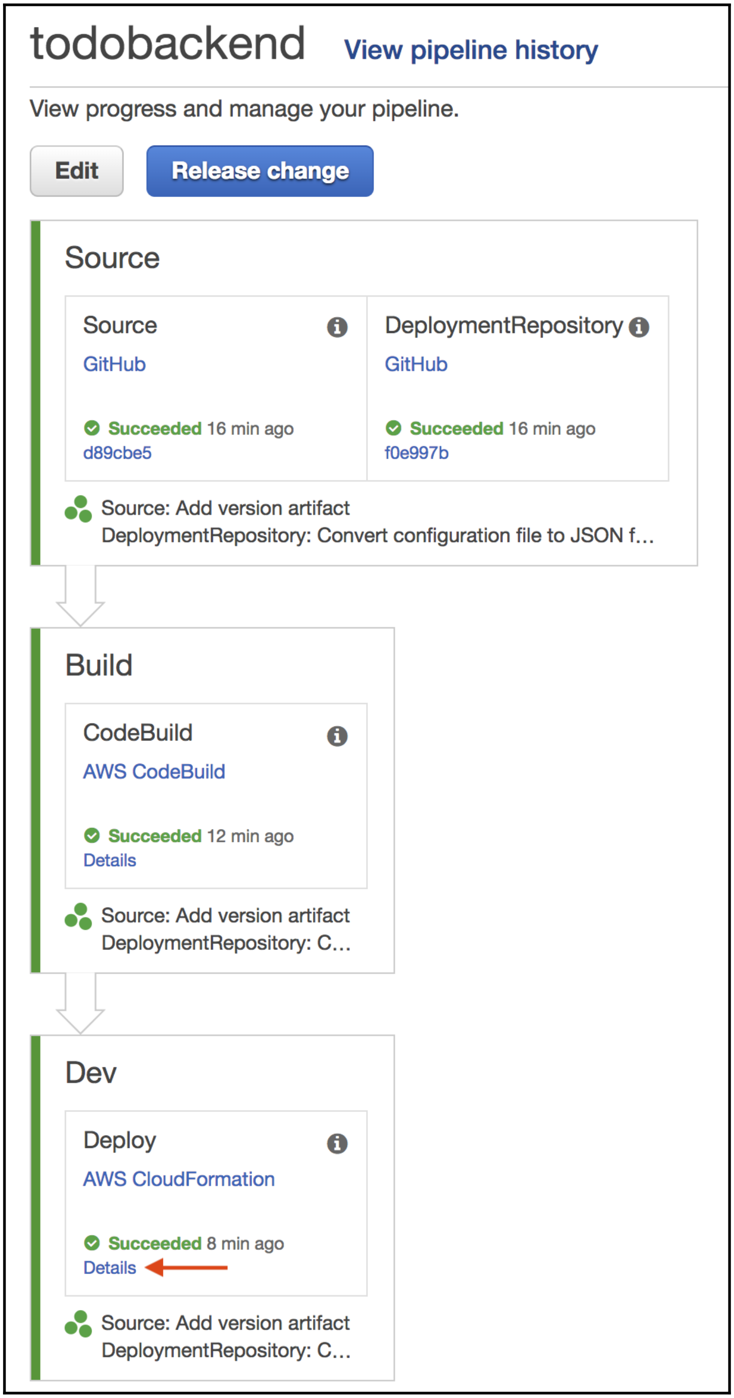
Choose one or more input artifacts for this action. The output of previous actions can be the input of this action. Learn more

Input artifacts #1: ApplicationVersion

Input artifacts #2: DeploymentRepository

Input artifacts #3:

* Required



View progress and manage your pipeline.

Source

Source GitHub
✓ Succeeded 16 min ago
d89cbe5

DeploymentRepository GitHub
✓ Succeeded 16 min ago
f0e997b

Source: Add version artifact
DeploymentRepository: Convert configuration file to JSON f...

Build

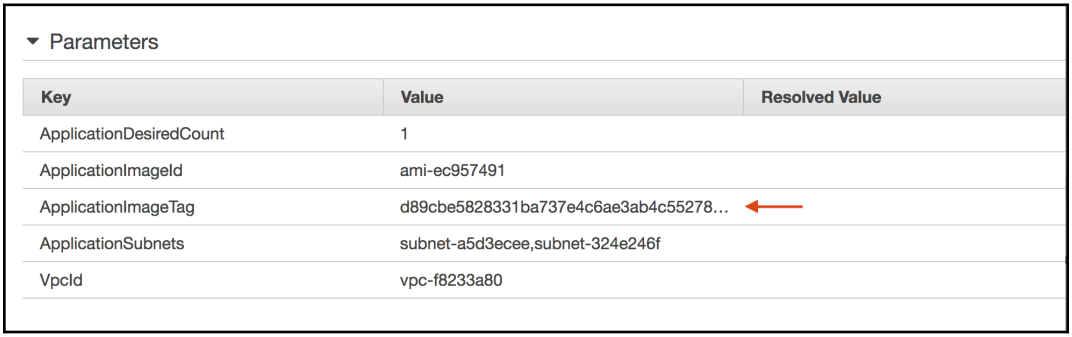
CodeBuild AWS CodeBuild
✓ Succeeded 12 min ago
Details

Source: Add version artifact
DeploymentRepository: C...

Dev

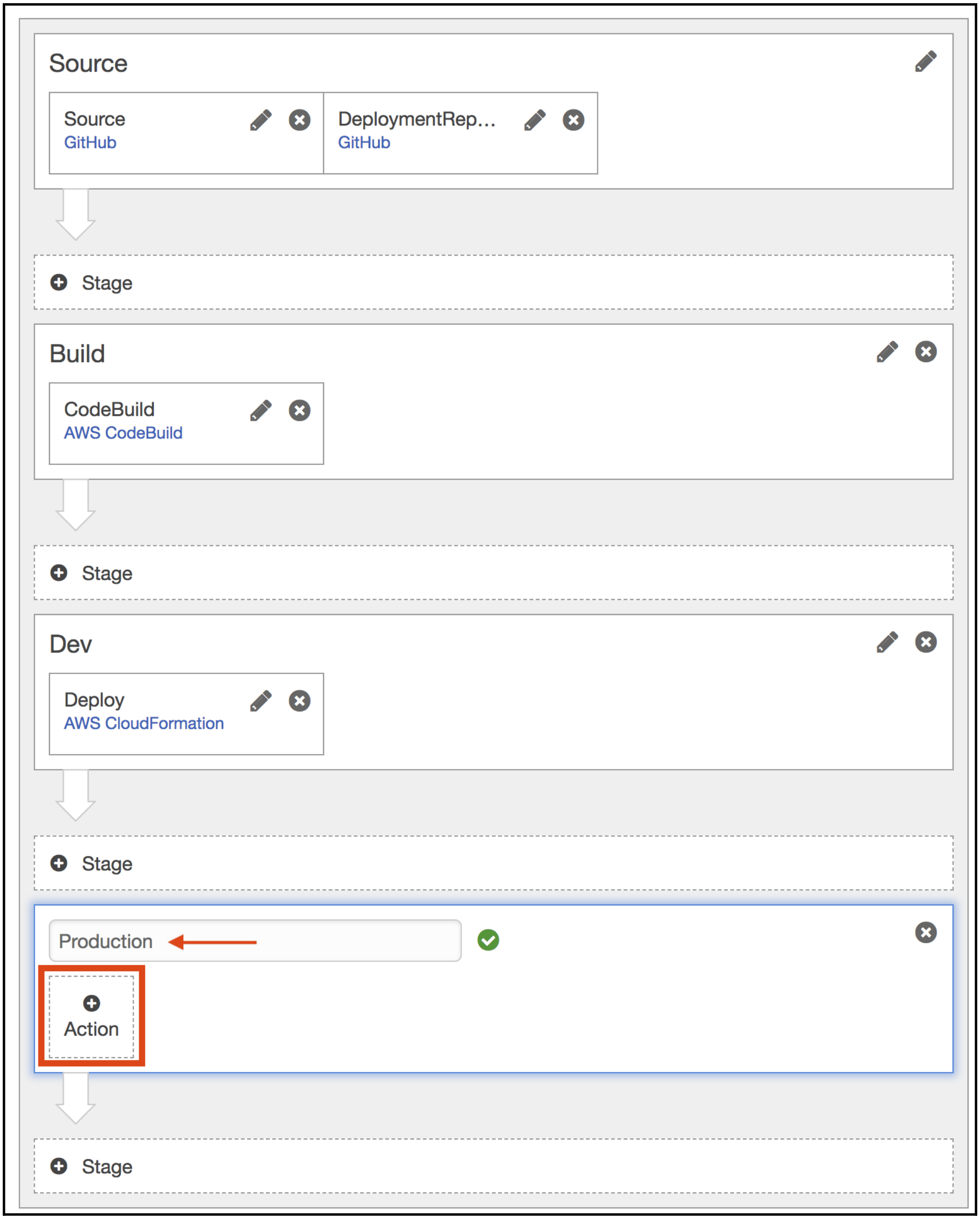
Deploy AWS CloudFormation
✓ Succeeded 8 min ago
Details

Source: Add version artifact
DeploymentRepository: C...

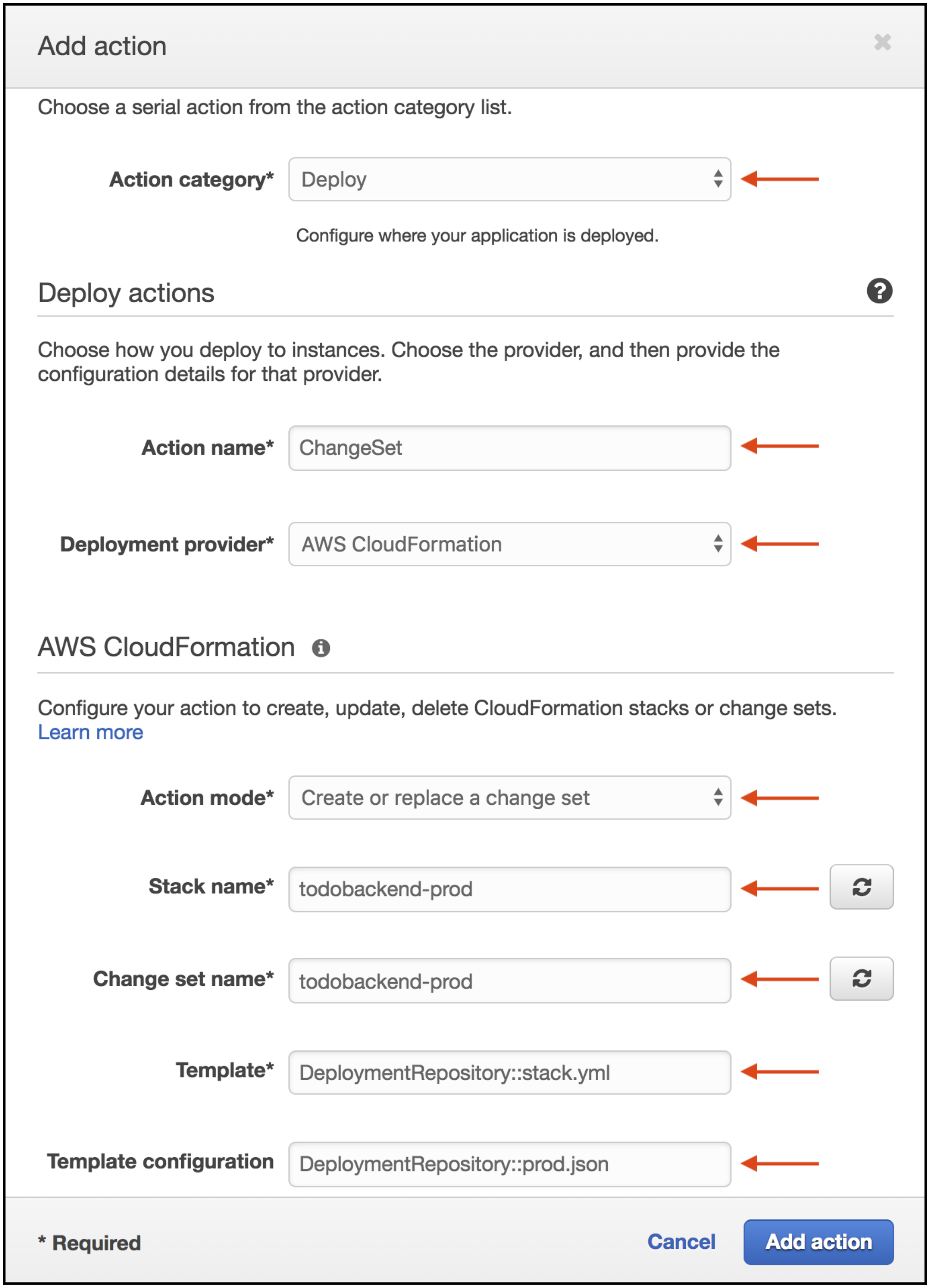


▾ Parameters

Key	Value	Resolved Value
ApplicationDesiredCount	1	
ApplicationImageId	ami-ec957491	
ApplicationImageTag	d89cbe5828331ba737e4c6ae3ab4c55278…	
ApplicationSubnets	subnet-a5d3ecee,subnet-324e246f	
VpcId	vpc-f8233a80	


Source
Source
GitHub
DeploymentRep...
GitHub
Stage
Build
CodeBuild
AWS CodeBuild
Stage
Dev
Deploy
AWS CloudFormation
Stage
Action
Stage

Production



Add action

Choose a serial action from the action category list.

Action category* Deploy

Configure where your application is deployed.

Deploy actions

Choose how you deploy to instances. Choose the provider, and then provide the configuration details for that provider.

Action name* ChangeSet

Deployment provider* AWS CloudFormation

AWS CloudFormation

Configure your action to create, update, delete CloudFormation stacks or change sets.
Learn more

Action mode* Create or replace a change set

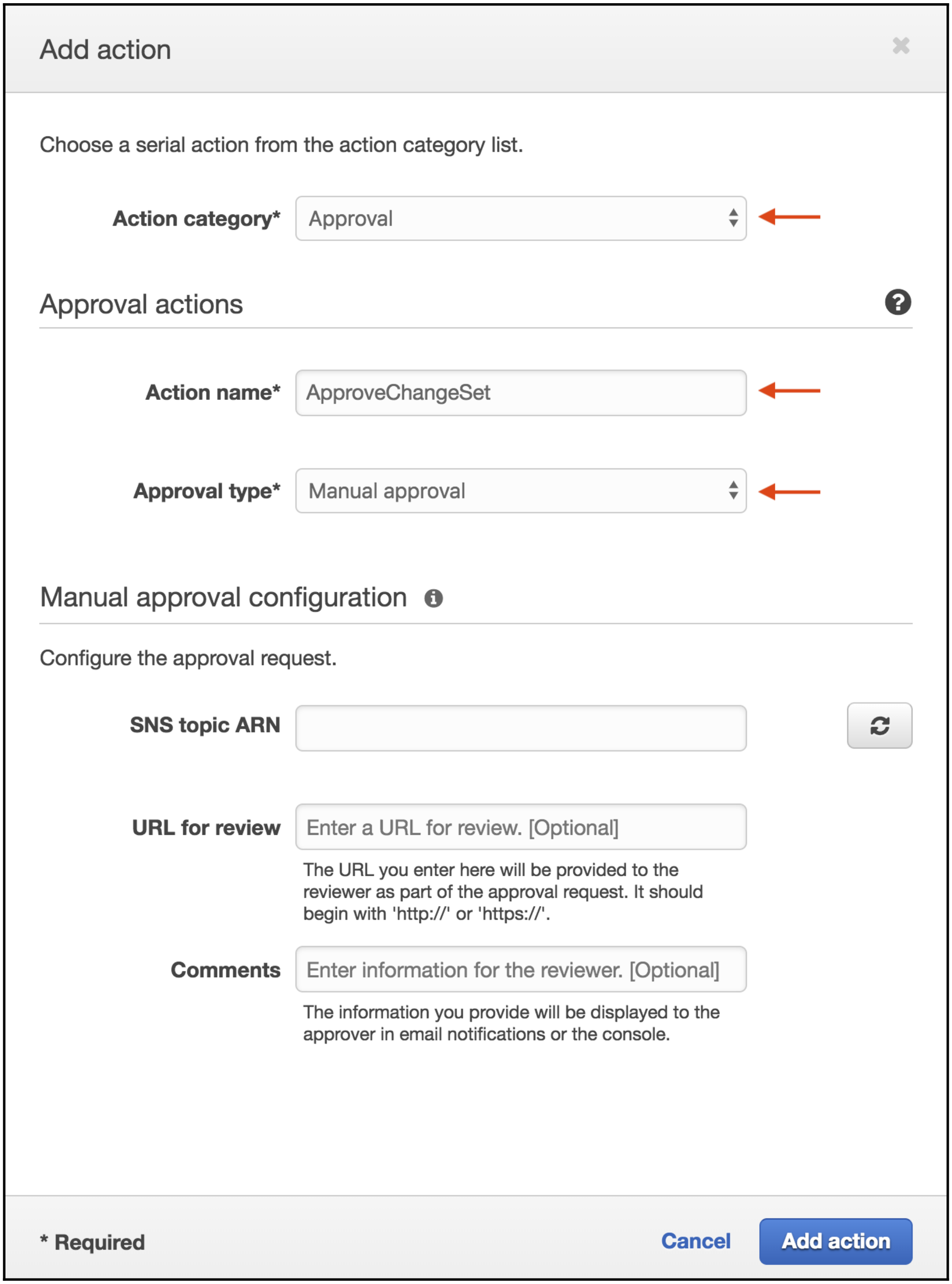
Stack name* todobackend-prod

Change set name* todobackend-prod

Template* DeploymentRepository::stack.yml

Template configuration DeploymentRepository::prod.json

*** Required**



Add action

Choose a serial action from the action category list.

Action category*: Approval

Approval actions

Action name*: ApproveChangeSet

Approval type*: Manual approval

Manual approval configuration

Configure the approval request.

SNS topic ARN:

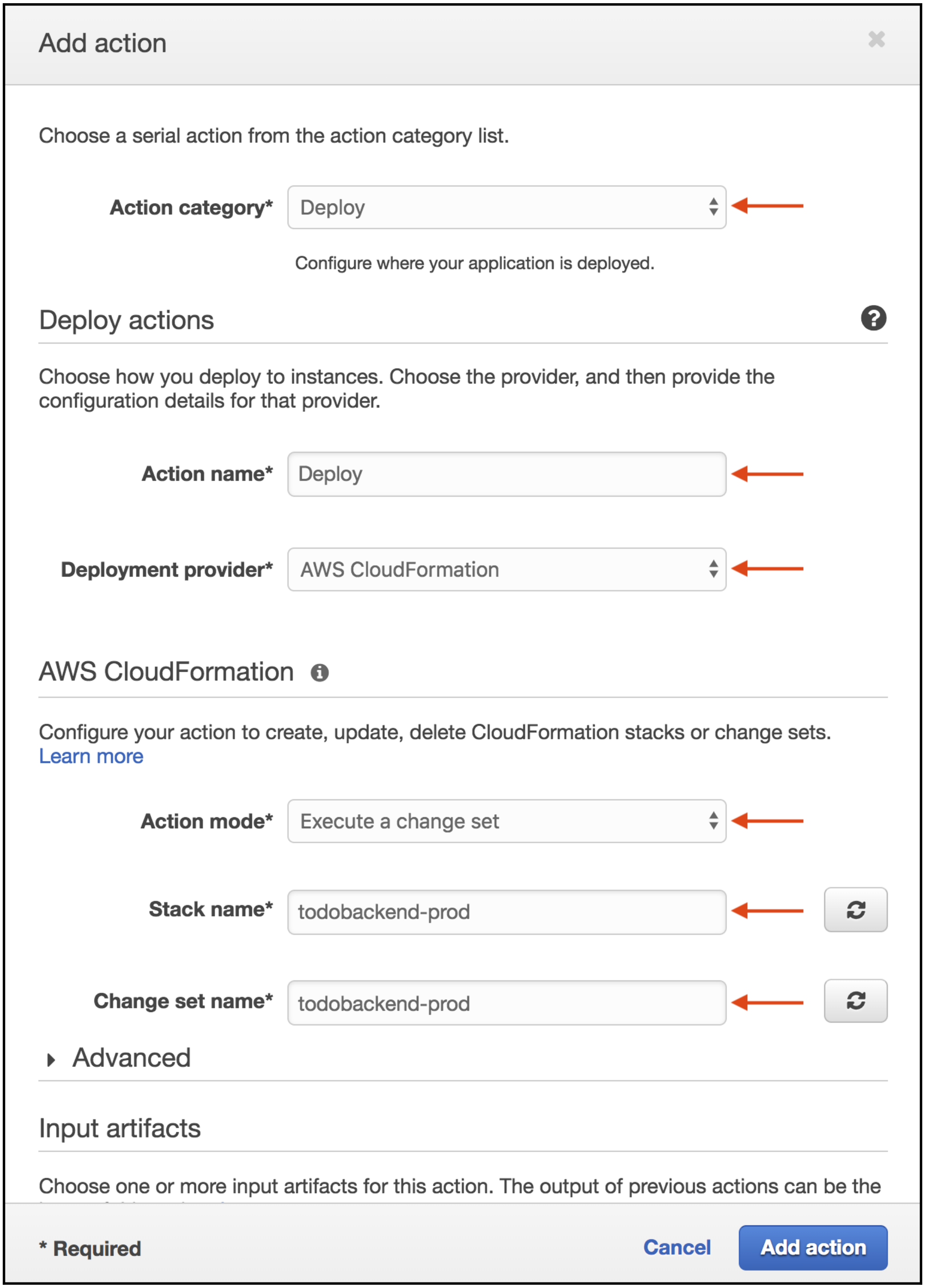
URL for review: Enter a URL for review. [Optional]

The URL you enter here will be provided to the reviewer as part of the approval request. It should begin with 'http://' or 'https://'.

Comments: Enter information for the reviewer. [Optional]

The information you provide will be displayed to the approver in email notifications or the console.

* Required



Add action

Choose a serial action from the action category list.

Action category* Deploy

Configure where your application is deployed.

Deploy actions

Choose how you deploy to instances. Choose the provider, and then provide the configuration details for that provider.

Action name* Deploy

Deployment provider* AWS CloudFormation

AWS CloudFormation

Configure your action to create, update, delete CloudFormation stacks or change sets. Learn more

Action mode* Execute a change set

Stack name* todobackend-prod

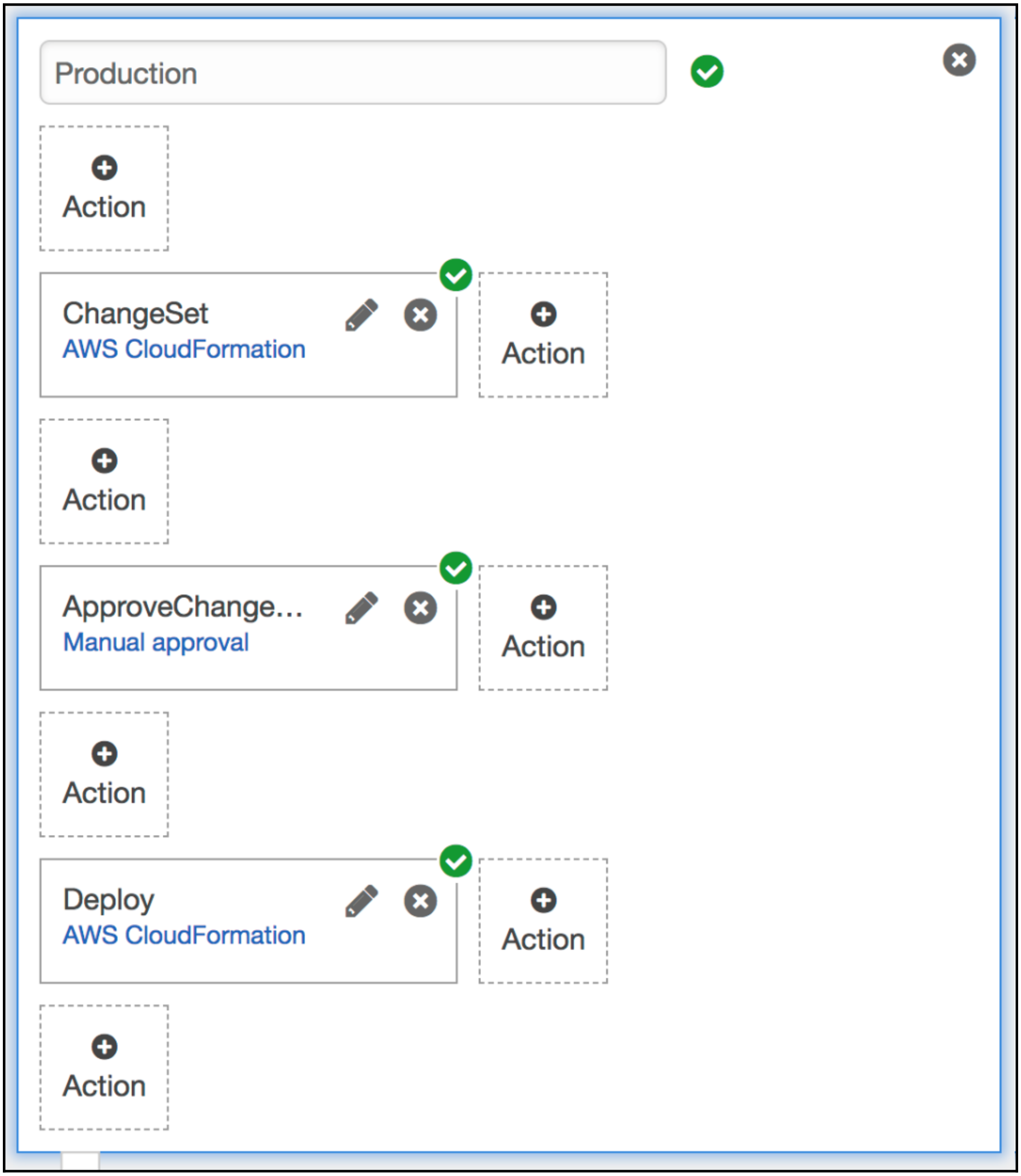
Change set name* todobackend-prod

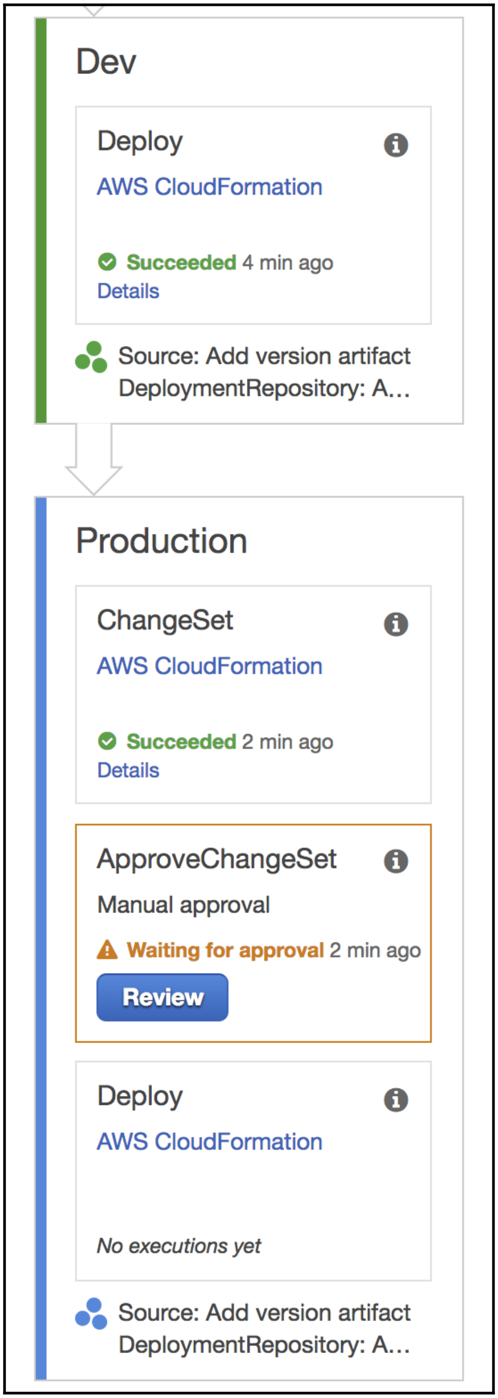
Advanced

Input artifacts

Choose one or more input artifacts for this action. The output of previous actions can be the

*** Required**


Production
Action
ChangeSet
AWS CloudFormation
Action
Action
ApproveChange...
Manual approval
Action
Action
Deploy
AWS CloudFormation
Action
Action



Dev

Deploy

AWS CloudFormation

✓ Succeeded 4 min ago

Details

Source: Add version artifact DeploymentRepository: A...

Production

ChangeSet

AWS CloudFormation

✓ Succeeded 2 min ago

Details

ApproveChangeSet

Manual approval

⚠ Waiting for approval 2 min ago

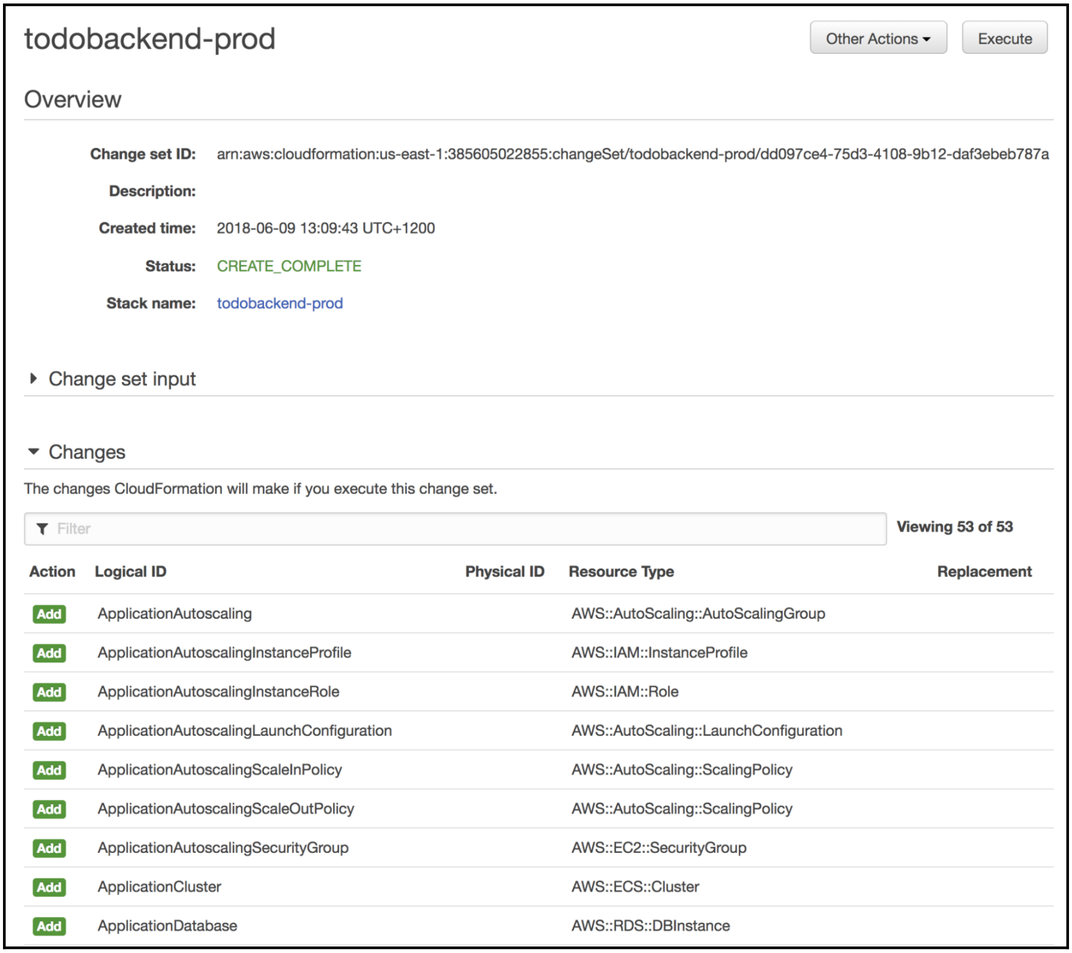
Review

Deploy

AWS CloudFormation

No executions yet

Source: Add version artifact DeploymentRepository: A...



todobackend-prod

Overview

Change set ID: arn:aws:cloudformation:us-east-1:385605022855:changeSet/todobackend-prod/dd097ce4-75d3-4108-9b12-daf3ebeb787a

Description:

Created time: 2018-06-09 13:09:43 UTC+1200

Status: CREATE_COMPLETE

Stack name: todobackend-prod

▸ Change set input

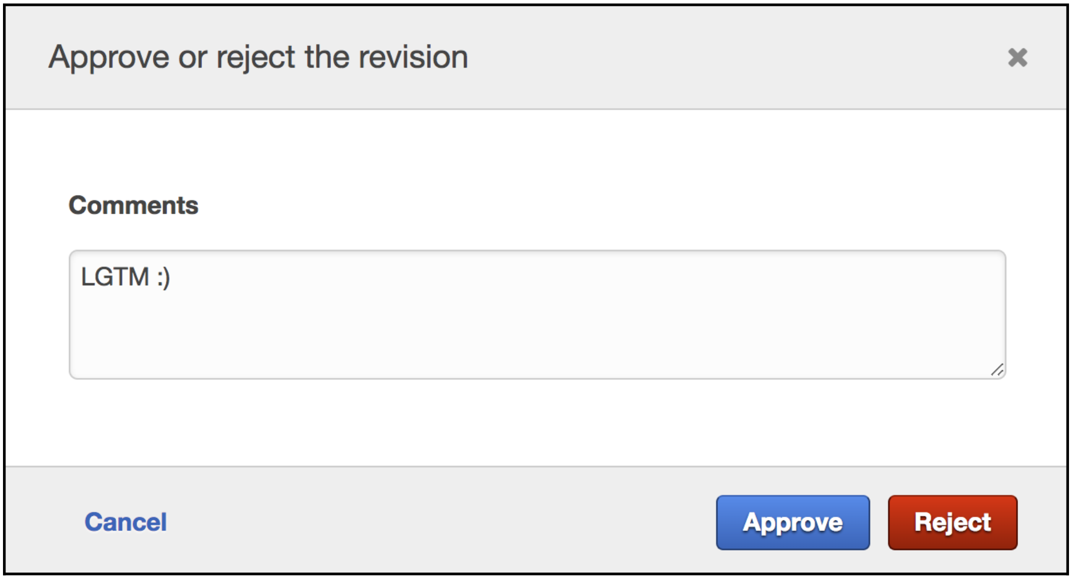
▾ Changes

The changes CloudFormation will make if you execute this change set.

Filter

Viewing 53 of 53

Action	Logical ID	Physical ID	Resource Type	Replacement
Add	ApplicationAutoscaling		AWS::AutoScaling::AutoScalingGroup	
Add	ApplicationAutoscalingInstanceProfile		AWS::IAM::InstanceProfile	
Add	ApplicationAutoscalingInstanceRole		AWS::IAM::Role	
Add	ApplicationAutoscalingLaunchConfiguration		AWS::AutoScaling::LaunchConfiguration	
Add	ApplicationAutoscalingScaleInPolicy		AWS::AutoScaling::ScalingPolicy	
Add	ApplicationAutoscalingScaleOutPolicy		AWS::AutoScaling::ScalingPolicy	
Add	ApplicationAutoscalingSecurityGroup		AWS::EC2::SecurityGroup	
Add	ApplicationCluster		AWS::ECS::Cluster	
Add	ApplicationDatabase		AWS::RDS::DBInstance	

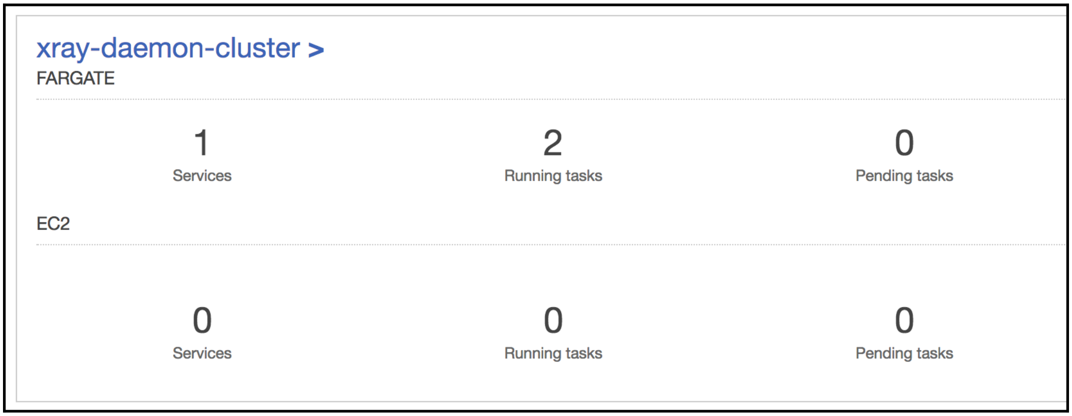


Approve or reject the revision

Comments

LGTM :)

Chapter 14: Fargate and ECS Service Discovery



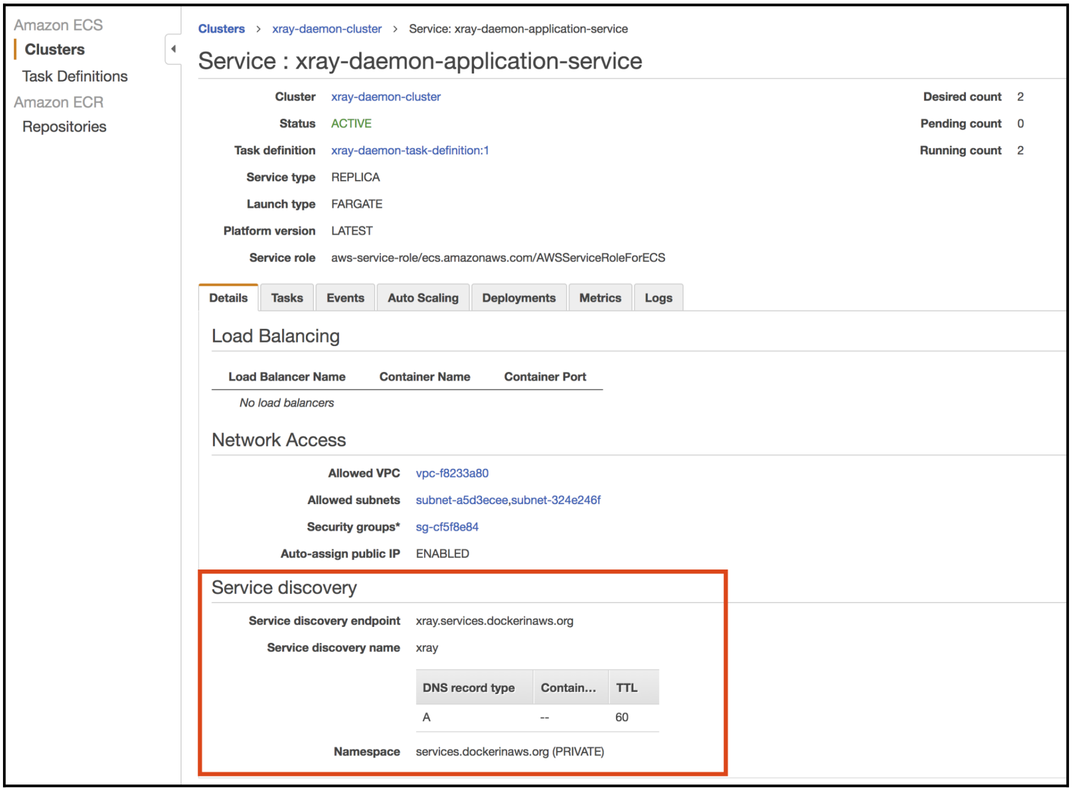
xray-daemon-cluster >

FARGATE

1	2	0
Services	Running tasks	Pending tasks

EC2

0	0	0
Services	Running tasks	Pending tasks



Clusters > xray-daemon-cluster > Service: xray-daemon-application-service

Service : xray-daemon-application-service

Cluster	xray-daemon-cluster
Status	ACTIVE
Task definition	xray-daemon-task-definition:1
Service type	REPLICA
Launch type	FARGATE
Platform version	LATEST
Service role	aws-service-role/ecs.amazonaws.com/AWSServiceRoleForECS

Desired count	2
Pending count	0
Running count	2

Load Balancing

Load Balancer Name	Container Name	Container Port
No load balancers		

Network Access

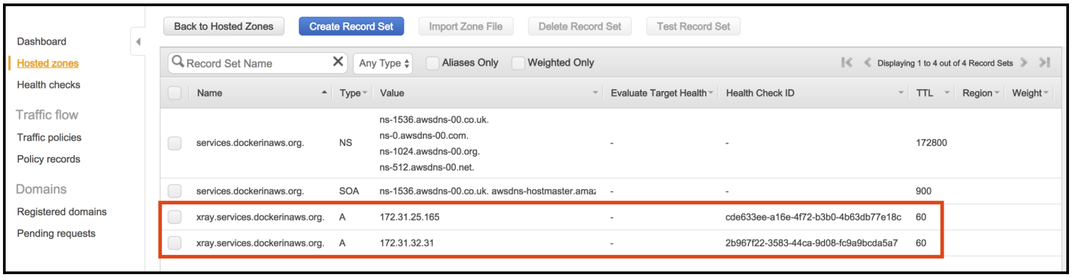
Allowed VPC	vpc-f8233a80
Allowed subnets	subnet-a5d3ecee,subnet-324e246f
Security groups*	sg-cf5f8e84
Auto-assign public IP	ENABLED

Service discovery

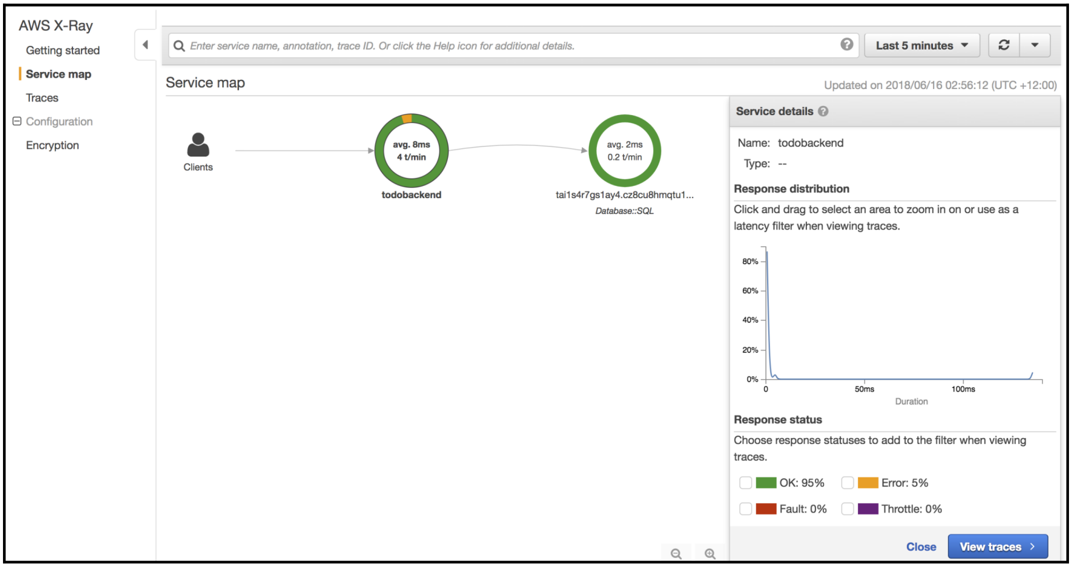
Service discovery endpoint	xray.services.dockerinaws.org
Service discovery name	xray

DNS record type	Contain...	TTL
A	--	60

Namespace	services.dockerinaws.org (PRIVATE)



Name	Type	Value	Evaluate Target Health	Health Check ID	TTL	Region	Weight
services.dockerinaws.org.	NS	ns-1536.awsdns-00.co.uk. ns-0.awsdns-00.com. ns-1024.awsdns-00.org. ns-512.awsdns-00.net.	-	-	172800		
services.dockerinaws.org.	SOA	ns-1536.awsdns-00.co.uk. awsdns-hostmaster.ama:	-	-	900		
xray.services.dockerinaws.org.	A	172.31.25.165	-	cde633ee-a16e-4f72-b3b0-4b63db77e18c	60		
xray.services.dockerinaws.org.	A	172.31.32.31	-	2b967f22-3583-44ca-9d08-fc9a9bcda5a7	60		



Name: todobackend

Type: --

Response distribution

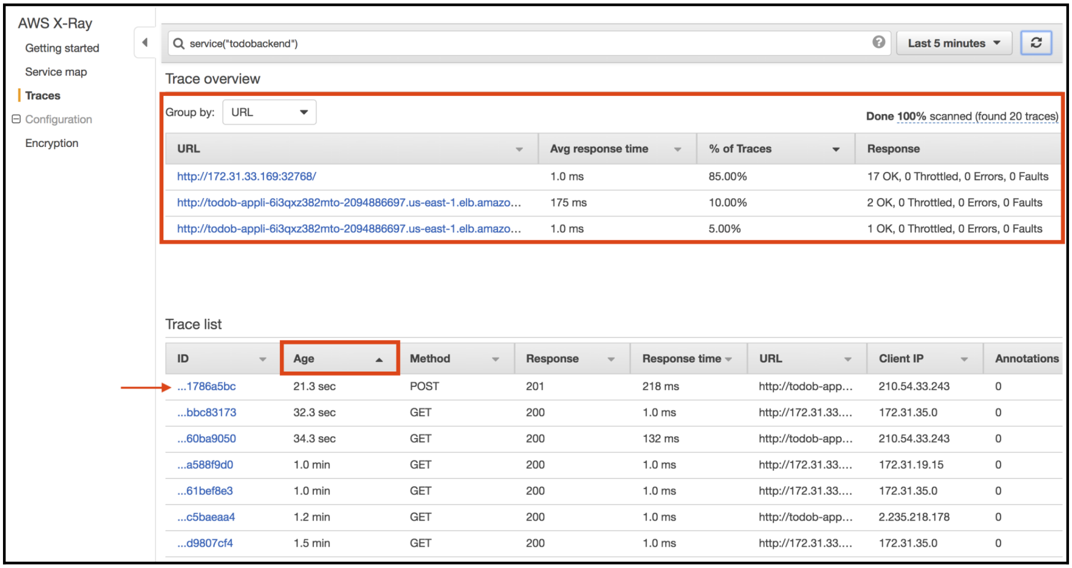
Click and drag to select an area to zoom in on or use as a latency filter when viewing traces.

Response status

Choose response statuses to add to the filter when viewing traces.

□ 🟩 OK: 95% □ 🟧 Error: 5%

□ 🟥 Fault: 0% □ 🟪 Throttle: 0%



service("todobackend")

Trace overview

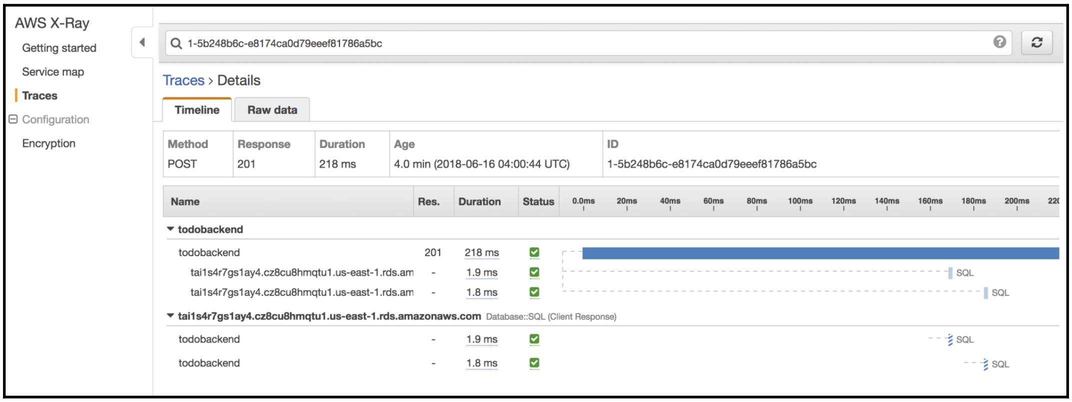
Group by: URL

Done 100% scanned (found 20 traces)

URL	Avg response time	% of Traces	Response
http://172.31.33.169:32768/	1.0 ms	85.00%	17 OK, 0 Throttled, 0 Errors, 0 Faults
http://todob-appli-6i3qxz382mto-2094886697.us-east-1.elb.amazo...	175 ms	10.00%	2 OK, 0 Throttled, 0 Errors, 0 Faults
http://todob-appli-6i3qxz382mto-2094886697.us-east-1.elb.amazo...	1.0 ms	5.00%	1 OK, 0 Throttled, 0 Errors, 0 Faults

Trace list

ID	Age	Method	Response	Response time	URL	Client IP	Annotations
...1786a5bc	21.3 sec	POST	201	218 ms	http://todob-app...	210.54.33.243	0
...bbc83173	32.3 sec	GET	200	1.0 ms	http://172.31.33....	172.31.35.0	0
...60ba9050	34.3 sec	GET	200	132 ms	http://todob-app...	210.54.33.243	0
...a588f9d0	1.0 min	GET	200	1.0 ms	http://172.31.33....	172.31.19.15	0
...61bef8e3	1.0 min	GET	200	1.0 ms	http://172.31.33....	172.31.35.0	0
...c5baeaa4	1.2 min	GET	200	1.0 ms	http://todob-app...	2.235.218.178	0
...d9807cf4	1.5 min	GET	200	1.0 ms	http://172.31.33....	172.31.35.0	0



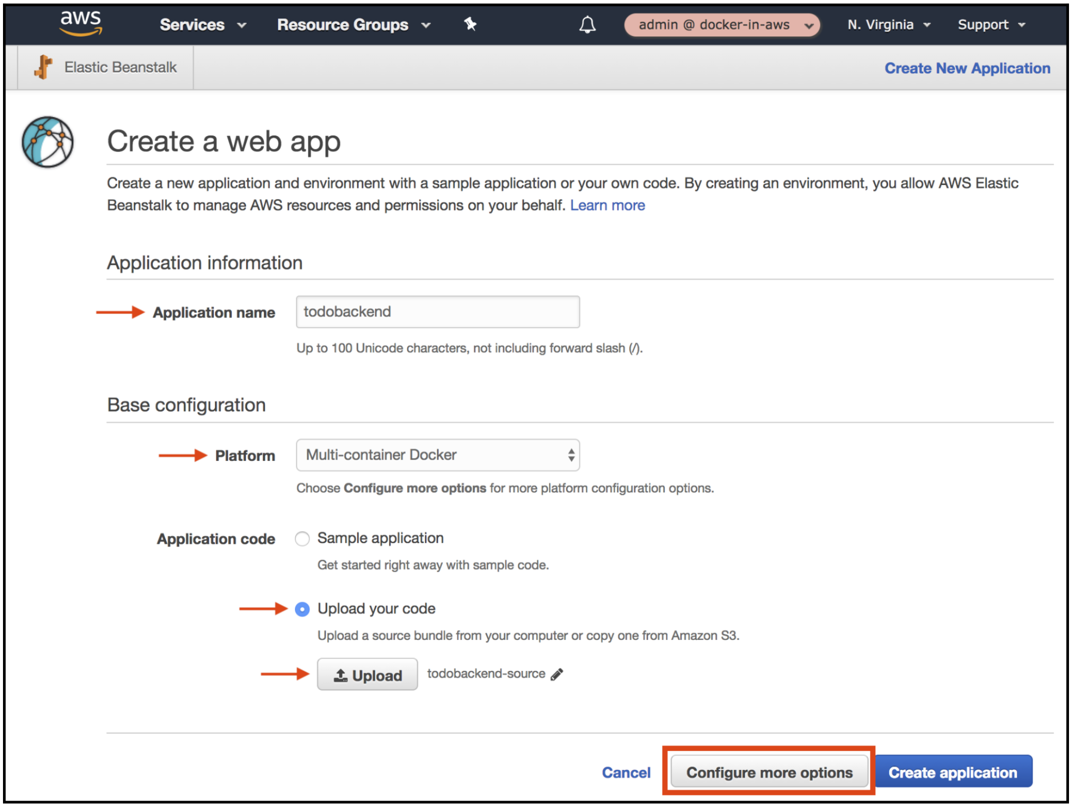
1-5b248b6c-e8174ca0d79eeef81786a5bc

Traces > Details

Method	Response	Duration	Age	ID
POST	201	218 ms	4.0 min (2018-06-16 04:00:44 UTC)	1-5b248b6c-e8174ca0d79eeef81786a5bc

Name	Res.	Duration	Status
todobackend			
todobackend	201	218 ms	✓
tai1s4r7gs1ay4.cz8cu8hmqtu1.us-east-1.rds.am	-	1.9 ms	✓
tai1s4r7gs1ay4.cz8cu8hmqtu1.us-east-1.rds.am	-	1.8 ms	✓
tai1s4r7gs1ay4.cz8cu8hmqtu1.us-east-1.rds.amazonaws.com Database::SQL (Client Response)			
todobackend	-	1.9 ms	✓
todobackend	-	1.8 ms	✓

Chapter 15: Elastic Beanstalk



Create a web app

Create a new application and environment with a sample application or your own code. By creating an environment, you allow AWS Elastic Beanstalk to manage AWS resources and permissions on your behalf. Learn more

Application information

Application name: todobackend

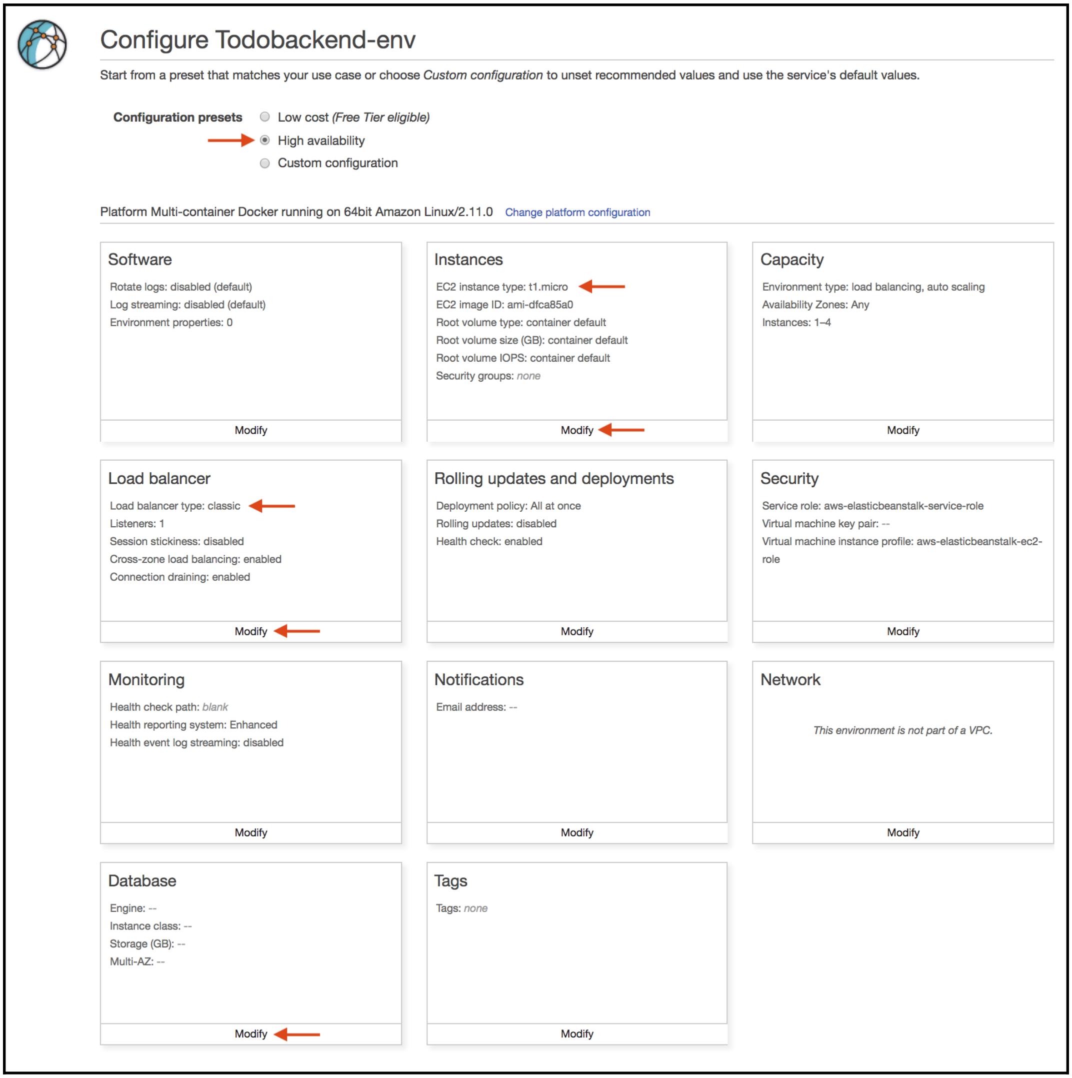
Up to 100 Unicode characters, not including forward slash (/).

Base configuration

Platform: Multi-container Docker

Choose **Configure more options** for more platform configuration options.

Application code
○ Sample application
Get started right away with sample code.
● Upload your code
Upload a source bundle from your computer or copy one from Amazon S3.
Upload todobackend-source



Configure Todobackend-env

Start from a preset that matches your use case or choose *Custom configuration* to unset recommended values and use the service's default values.

Configuration presets
○ Low cost *(Free Tier eligible)*
● High availability
○ Custom configuration

Platform Multi-container Docker running on 64bit Amazon Linux/2.11.0 Change platform configuration

Software
Rotate logs: disabled (default)
Log streaming: disabled (default)
Environment properties: 0
Modify

Instances
EC2 instance type: t1.micro
EC2 image ID: ami-dfca85a0
Root volume type: container default
Root volume size (GB): container default
Root volume IOPS: container default
Security groups: *none*
Modify

Capacity
Environment type: load balancing, auto scaling
Availability Zones: Any
Instances: 1–4
Modify

Load balancer
Load balancer type: classic
Listeners: 1
Session stickiness: disabled
Cross-zone load balancing: enabled
Connection draining: enabled
Modify

Rolling updates and deployments
Deployment policy: All at once
Rolling updates: disabled
Health check: enabled
Modify

Security
Service role: aws-elasticbeanstalk-service-role
Virtual machine key pair: --
Virtual machine instance profile: aws-elasticbeanstalk-ec2-role
Modify

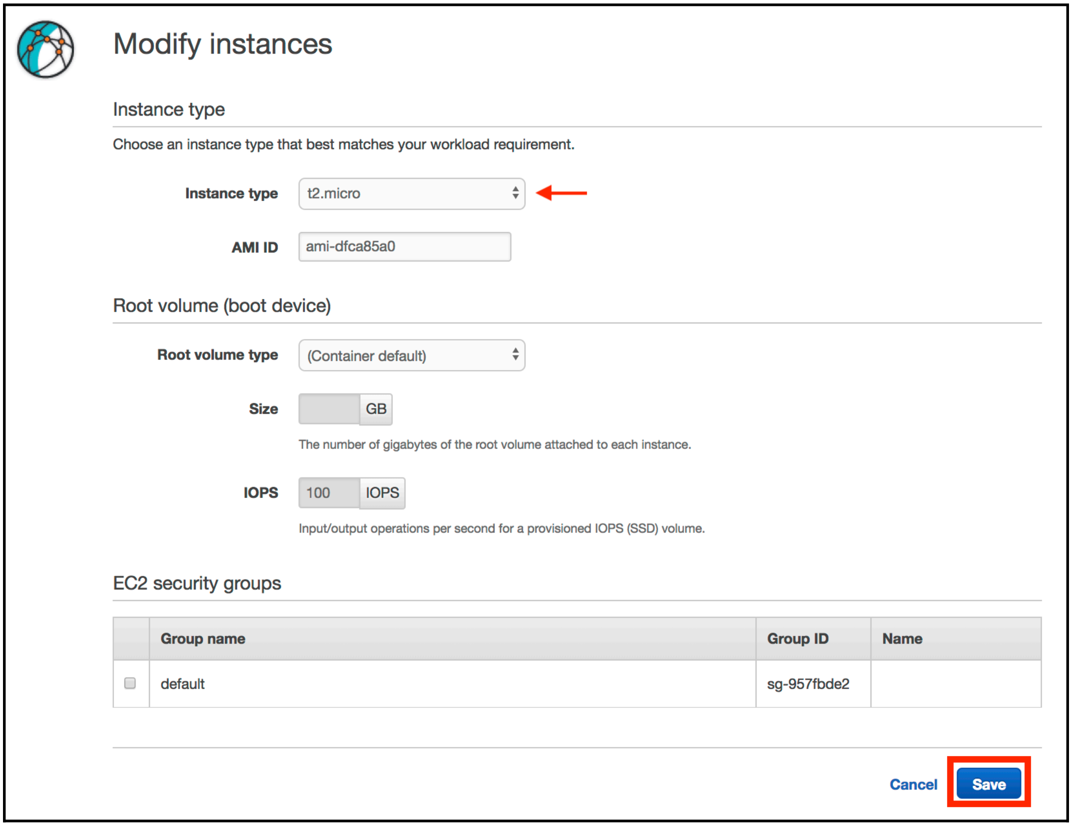
Monitoring
Health check path: *blank*
Health reporting system: Enhanced
Health event log streaming: disabled
Modify

Notifications
Email address: --
Modify

Network
This environment is not part of a VPC.
Modify

Database
Engine: --
Instance class: --
Storage (GB): --
Multi-AZ: --
Modify

Tags
Tags: *none*
Modify



Modify instances

Instance type

Choose an instance type that best matches your workload requirement.

Instance type t2.micro

AMI ID ami-dfca85a0

Root volume (boot device)

Root volume type (Container default)

Size GB

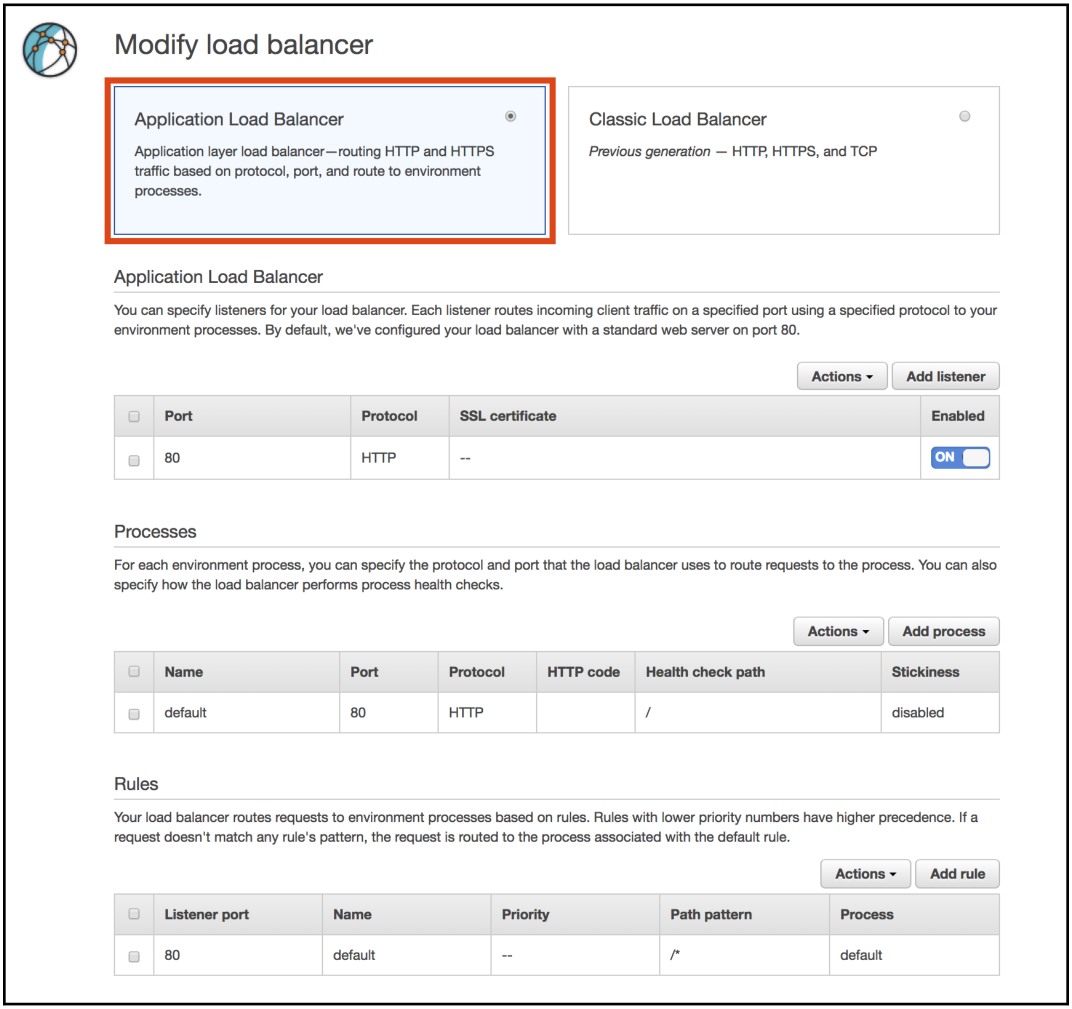
The number of gigabytes of the root volume attached to each instance.

IOPS 100 IOPS

Input/output operations per second for a provisioned IOPS (SSD) volume.

EC2 security groups

	Group name	Group ID	Name
□	default	sg-957fbde2	



Modify load balancer

Application Load Balancer ●

Application layer load balancer—routing HTTP and HTTPS traffic based on protocol, port, and route to environment processes.

Classic Load Balancer ○

Previous generation — HTTP, HTTPS, and TCP

Application Load Balancer

You can specify listeners for your load balancer. Each listener routes incoming client traffic on a specified port using a specified protocol to your environment processes. By default, we've configured your load balancer with a standard web server on port 80.

□	Port	Protocol	SSL certificate	Enabled
□	80	HTTP	--	ON

Processes

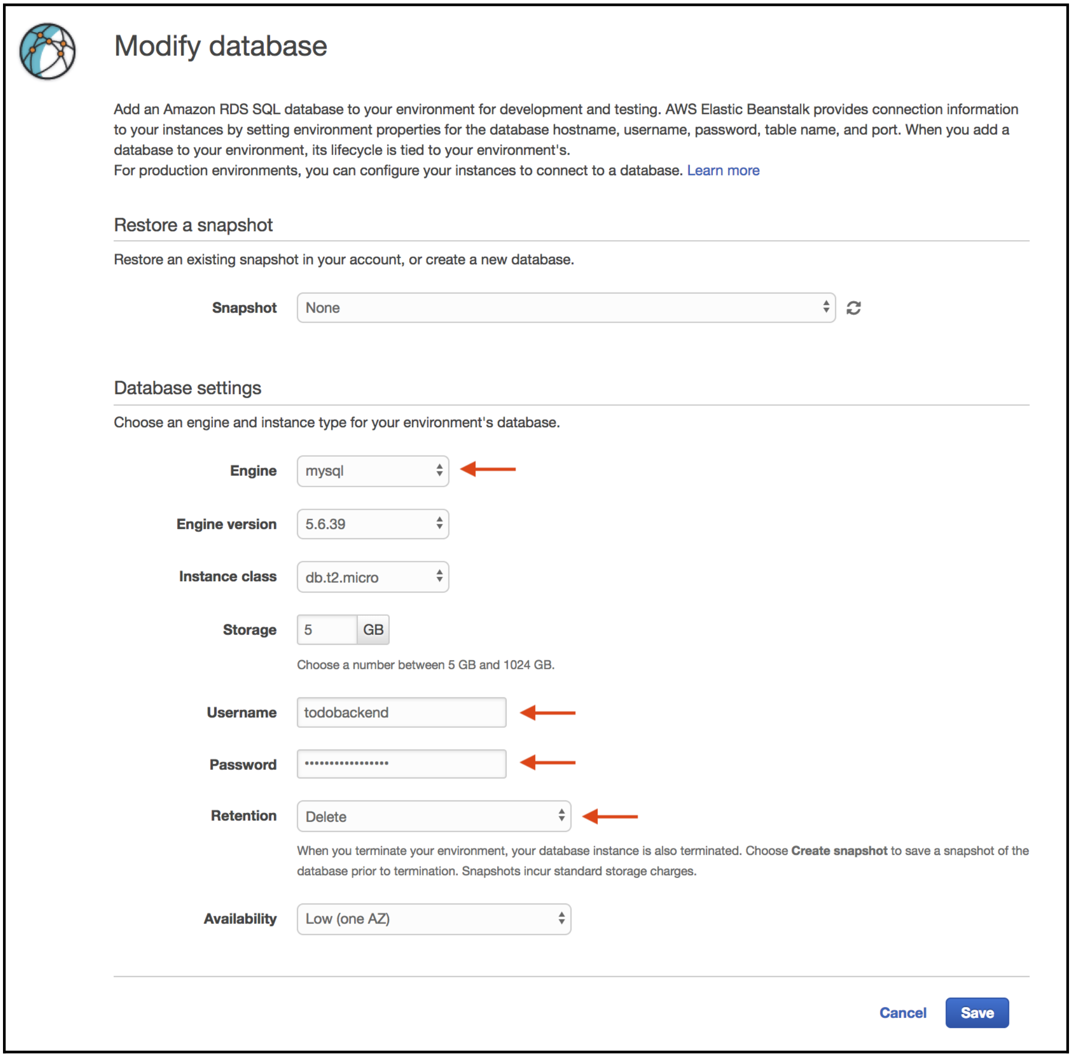
For each environment process, you can specify the protocol and port that the load balancer uses to route requests to the process. You can also specify how the load balancer performs process health checks.

□	Name	Port	Protocol	HTTP code	Health check path	Stickiness
□	default	80	HTTP		/	disabled

Rules

Your load balancer routes requests to environment processes based on rules. Rules with lower priority numbers have higher precedence. If a request doesn't match any rule's pattern, the request is routed to the process associated with the default rule.

□	Listener port	Name	Priority	Path pattern	Process
□	80	default	--	/*	default



Modify database

Add an Amazon RDS SQL database to your environment for development and testing. AWS Elastic Beanstalk provides connection information to your instances by setting environment properties for the database hostname, username, password, table name, and port. When you add a database to your environment, its lifecycle is tied to your environment's.
For production environments, you can configure your instances to connect to a database. Learn more

Restore a snapshot

Restore an existing snapshot in your account, or create a new database.

Snapshot None

Database settings

Choose an engine and instance type for your environment's database.

Engine mysql

Engine version 5.6.39

Instance class db.t2.micro

Storage 5 GB

Choose a number between 5 GB and 1024 GB.

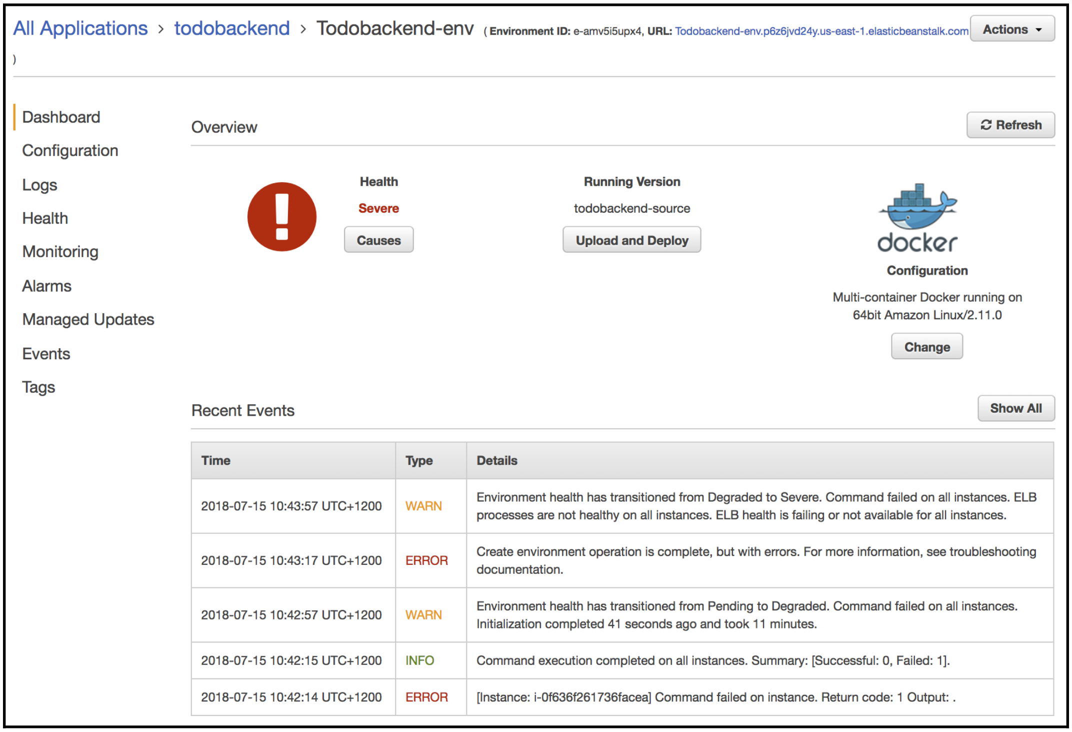
Username todobackend

Password ••••••••••••••••

Retention Delete

When you terminate your environment, your database instance is also terminated. Choose **Create snapshot** to save a snapshot of the database prior to termination. Snapshots incur standard storage charges.

Availability Low (one AZ)



All Applications > todobackend > Todobackend-env (**Environment ID:** e-amv5i5upx4, **URL:** Todobackend-env.p6z6jvd24y.us-east-1.elasticbeanstalk.com)

Health

Severe

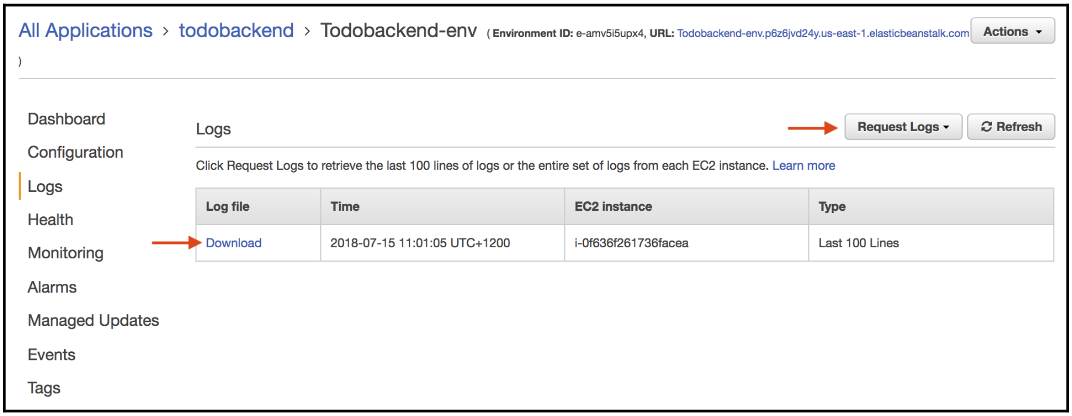
Running Version

todobackend-source

Configuration

Multi-container Docker running on 64bit Amazon Linux/2.11.0

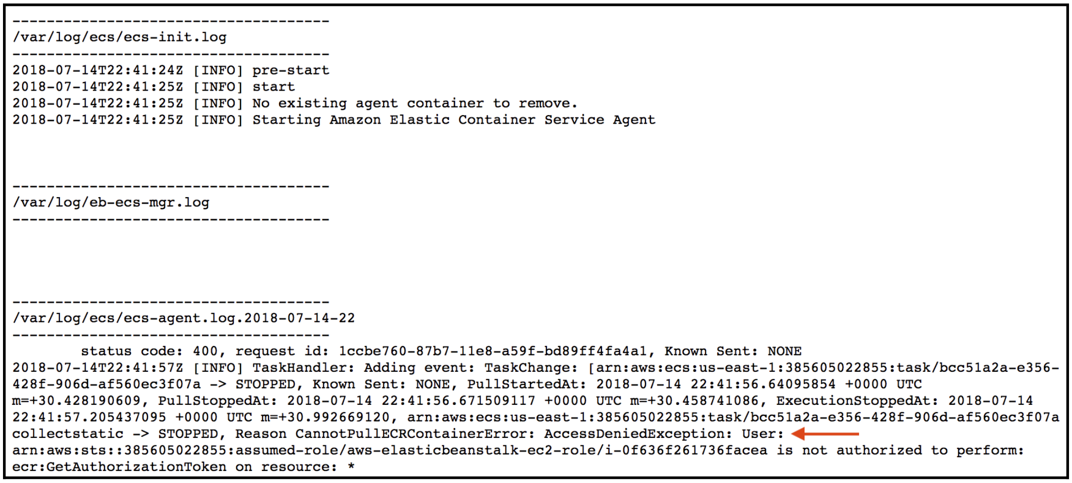
Time	Type	Details
2018-07-15 10:43:57 UTC+1200	WARN	Environment health has transitioned from Degraded to Severe. Command failed on all instances. ELB processes are not healthy on all instances. ELB health is failing or not available for all instances.
2018-07-15 10:43:17 UTC+1200	ERROR	Create environment operation is complete, but with errors. For more information, see troubleshooting documentation.
2018-07-15 10:42:57 UTC+1200	WARN	Environment health has transitioned from Pending to Degraded. Command failed on all instances. Initialization completed 41 seconds ago and took 11 minutes.
2018-07-15 10:42:15 UTC+1200	INFO	Command execution completed on all instances. Summary: [Successful: 0, Failed: 1].
2018-07-15 10:42:14 UTC+1200	ERROR	[Instance: i-0f636f261736facea] Command failed on instance. Return code: 1 Output: .



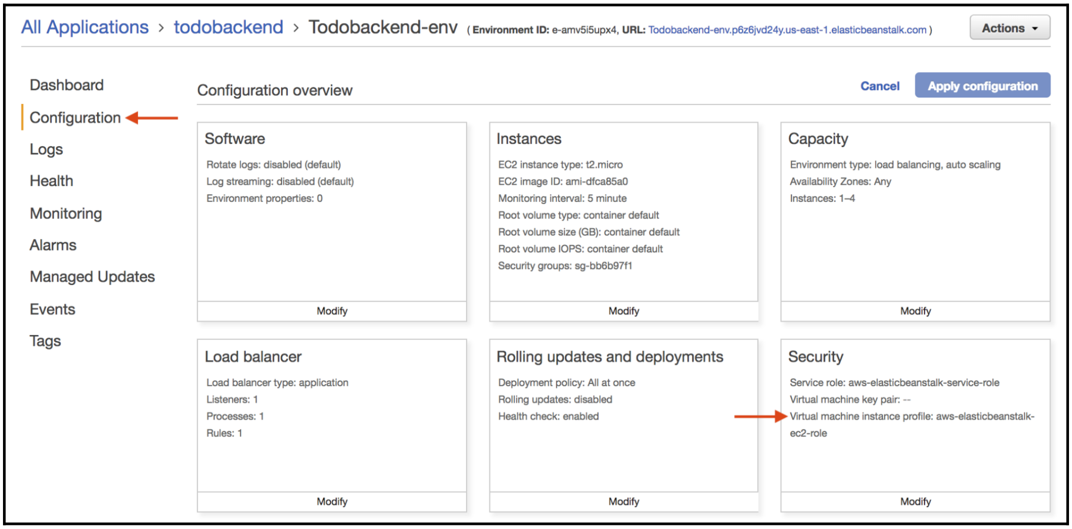
All Applications > todobackend > Todobackend-env (**Environment ID:** e-amv5i5upx4, **URL:** Todobackend-env.p6z6jvd24y.us-east-1.elasticbeanstalk.com)

Click Request Logs to retrieve the last 100 lines of logs or the entire set of logs from each EC2 instance. Learn more

Log file	Time	EC2 instance	Type
Download	2018-07-15 11:01:05 UTC+1200	i-0f636f261736facea	Last 100 Lines



```
-------------------------------------
/var/log/ecs/ecs-init.log
-------------------------------------
2018-07-14T22:41:24Z [INFO] pre-start
2018-07-14T22:41:25Z [INFO] start
2018-07-14T22:41:25Z [INFO] No existing agent container to remove.
2018-07-14T22:41:25Z [INFO] Starting Amazon Elastic Container Service Agent



-------------------------------------
/var/log/eb-ecs-mgr.log
-------------------------------------




-------------------------------------
/var/log/ecs/ecs-agent.log.2018-07-14-22
-------------------------------------
        status code: 400, request id: 1ccbe760-87b7-11e8-a59f-bd89ff4fa4a1, Known Sent: NONE
2018-07-14T22:41:57Z [INFO] TaskHandler: Adding event: TaskChange: [arn:aws:ecs:us-east-1:385605022855:task/bcc51a2a-e356-
428f-906d-af560ec3f07a -> STOPPED, Known Sent: NONE, PullStartedAt: 2018-07-14 22:41:56.64095854 +0000 UTC
m=+30.428190609, PullStoppedAt: 2018-07-14 22:41:56.671509117 +0000 UTC m=+30.458741086, ExecutionStoppedAt: 2018-07-14
22:41:57.205437095 +0000 UTC m=+30.992669120, arn:aws:ecs:us-east-1:385605022855:task/bcc51a2a-e356-428f-906d-af560ec3f07a
collectstatic -> STOPPED, Reason CannotPullECRContainerError: AccessDeniedException: User:
arn:aws:sts::385605022855:assumed-role/aws-elasticbeanstalk-ec2-role/i-0f636f261736facea is not authorized to perform:
ecr:GetAuthorizationToken on resource: *
```



All Applications › todobackend › Todobackend-env (**Environment ID:** e-amv5i5upx4, **URL:** Todobackend-env.p6z6jvd24y.us-east-1.elasticbeanstalk.com)

Configuration overview

Software

Rotate logs: disabled (default)
Log streaming: disabled (default)
Environment properties: 0

Instances

EC2 instance type: t2.micro
EC2 image ID: ami-dfca85a0
Monitoring interval: 5 minute
Root volume type: container default
Root volume size (GB): container default
Root volume IOPS: container default
Security groups: sg-bb6b97f1

Capacity

Environment type: load balancing, auto scaling
Availability Zones: Any
Instances: 1–4

Load balancer

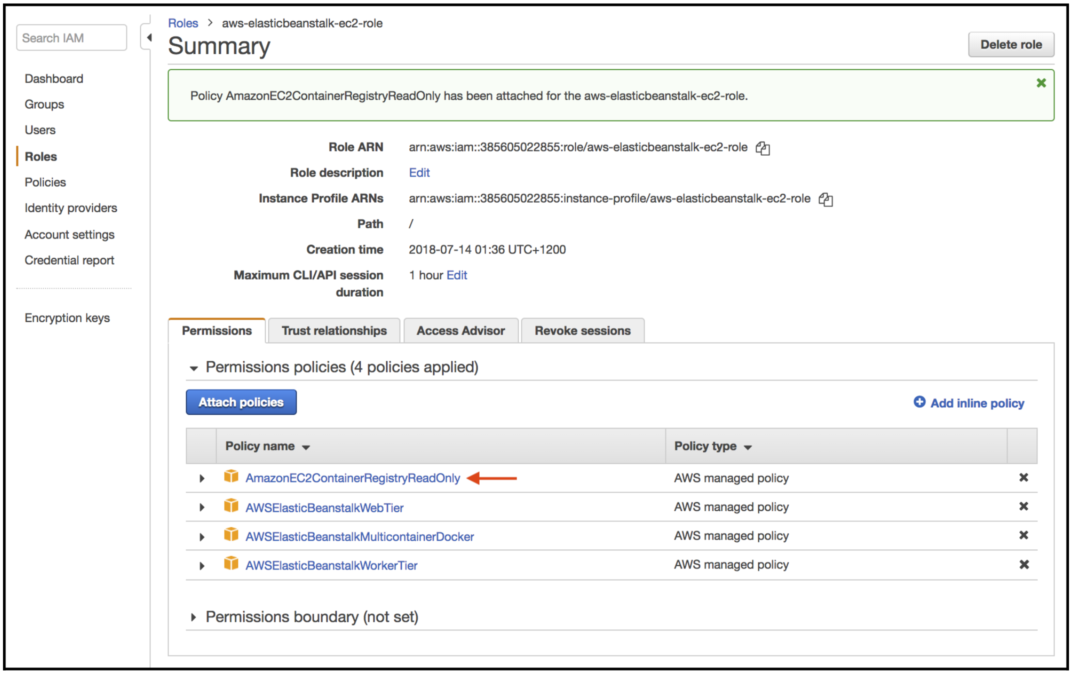
Load balancer type: application
Listeners: 1
Processes: 1
Rules: 1

Rolling updates and deployments

Deployment policy: All at once
Rolling updates: disabled
Health check: enabled

Security

Service role: aws-elasticbeanstalk-service-role
Virtual machine key pair: --
Virtual machine instance profile: aws-elasticbeanstalk-ec2-role



Summary

Policy AmazonEC2ContainerRegistryReadOnly has been attached for the aws-elasticbeanstalk-ec2-role.

Role ARN arn:aws:iam::385605022855:role/aws-elasticbeanstalk-ec2-role

Role description Edit

Instance Profile ARNs arn:aws:iam::385605022855:instance-profile/aws-elasticbeanstalk-ec2-role

Path /

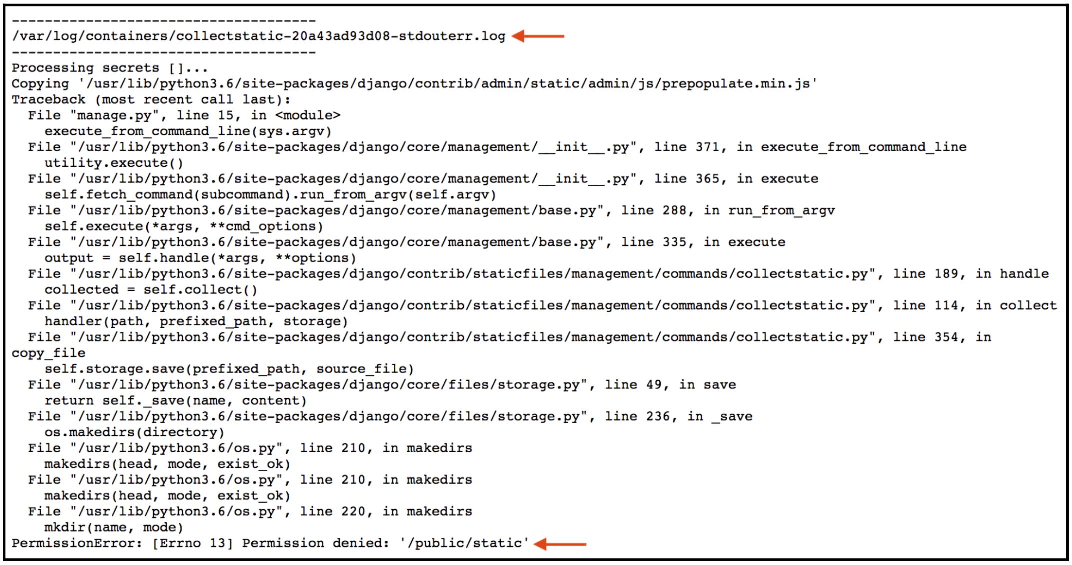
Creation time 2018-07-14 01:36 UTC+1200

Maximum CLI/API session duration 1 hour Edit

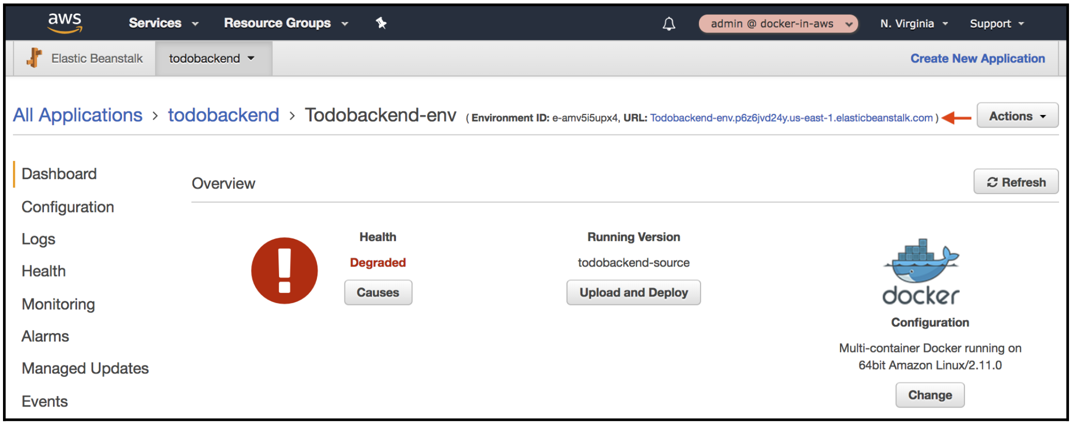
Permissions policies (4 policies applied)

Policy name	Policy type	
AmazonEC2ContainerRegistryReadOnly	AWS managed policy	✖
AWSElasticBeanstalkWebTier	AWS managed policy	✖
AWSElasticBeanstalkMulticontainerDocker	AWS managed policy	✖
AWSElasticBeanstalkWorkerTier	AWS managed policy	✖

Permissions boundary (not set)



```
-------------------------------------
/var/log/containers/collectstatic-20a43ad93d08-stdouterr.log
-------------------------------------
Processing secrets []...
Copying '/usr/lib/python3.6/site-packages/django/contrib/admin/static/admin/js/prepopulate.min.js'
Traceback (most recent call last):
  File "manage.py", line 15, in <module>
    execute_from_command_line(sys.argv)
  File "/usr/lib/python3.6/site-packages/django/core/management/__init__.py", line 371, in execute_from_command_line
    utility.execute()
  File "/usr/lib/python3.6/site-packages/django/core/management/__init__.py", line 365, in execute
    self.fetch_command(subcommand).run_from_argv(self.argv)
  File "/usr/lib/python3.6/site-packages/django/core/management/base.py", line 288, in run_from_argv
    self.execute(*args, **cmd_options)
  File "/usr/lib/python3.6/site-packages/django/core/management/base.py", line 335, in execute
    output = self.handle(*args, **options)
  File "/usr/lib/python3.6/site-packages/django/contrib/staticfiles/management/commands/collectstatic.py", line 189, in handle
    collected = self.collect()
  File "/usr/lib/python3.6/site-packages/django/contrib/staticfiles/management/commands/collectstatic.py", line 114, in collect
    handler(path, prefixed_path, storage)
  File "/usr/lib/python3.6/site-packages/django/contrib/staticfiles/management/commands/collectstatic.py", line 354, in
copy_file
    self.storage.save(prefixed_path, source_file)
  File "/usr/lib/python3.6/site-packages/django/core/files/storage.py", line 49, in save
    return self._save(name, content)
  File "/usr/lib/python3.6/site-packages/django/core/files/storage.py", line 236, in _save
    os.makedirs(directory)
  File "/usr/lib/python3.6/os.py", line 210, in makedirs
    makedirs(head, mode, exist_ok)
  File "/usr/lib/python3.6/os.py", line 210, in makedirs
    makedirs(head, mode, exist_ok)
  File "/usr/lib/python3.6/os.py", line 220, in makedirs
    mkdir(name, mode)
PermissionError: [Errno 13] Permission denied: '/public/static'
```

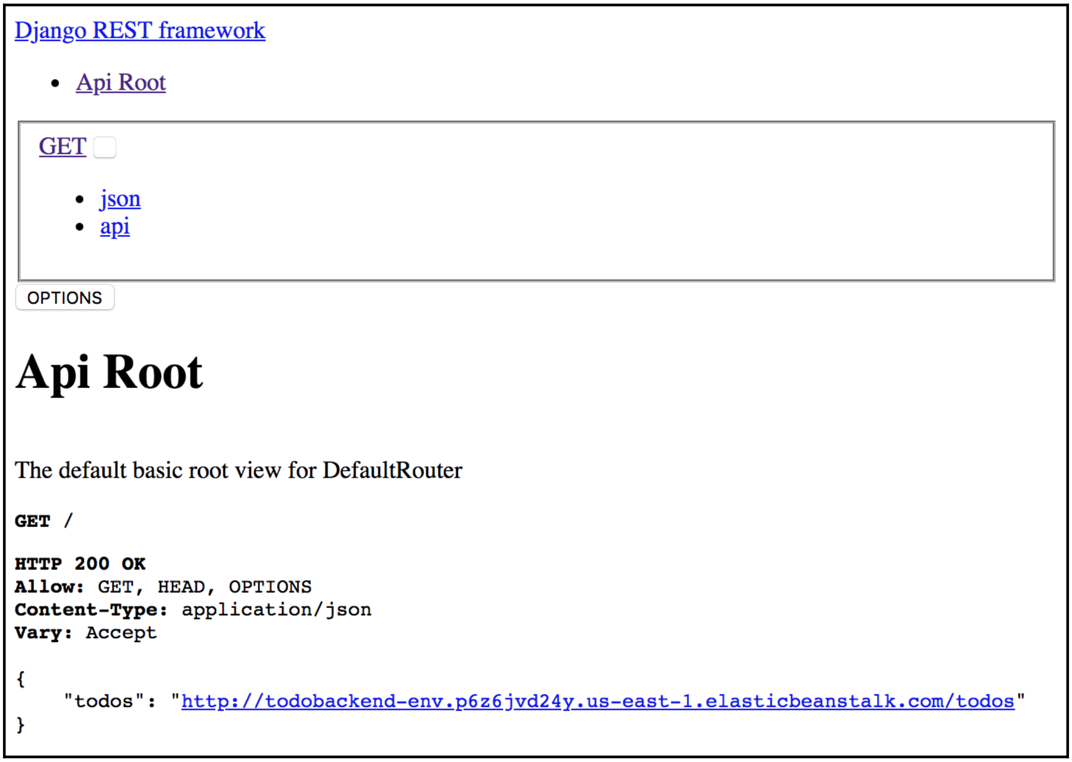


All Applications > todobackend > Todobackend-env (**Environment ID:** e-amv5i5upx4, **URL:** Todobackend-env.p6z6jvd24y.us-east-1.elasticbeanstalk.com)

Health
Degraded

Running Version
todobackend-source

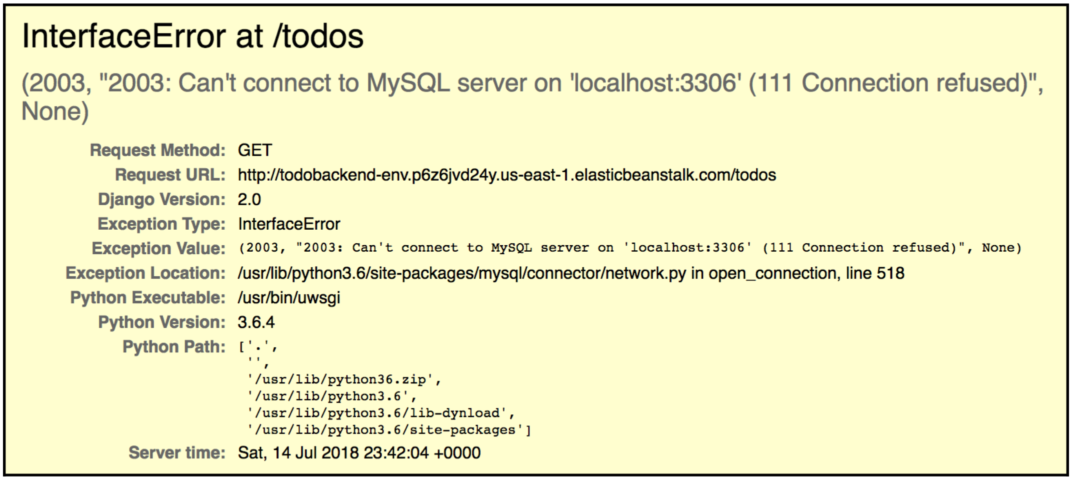
Configuration
Multi-container Docker running on 64bit Amazon Linux/2.11.0



Api Root

The default basic root view for DefaultRouter

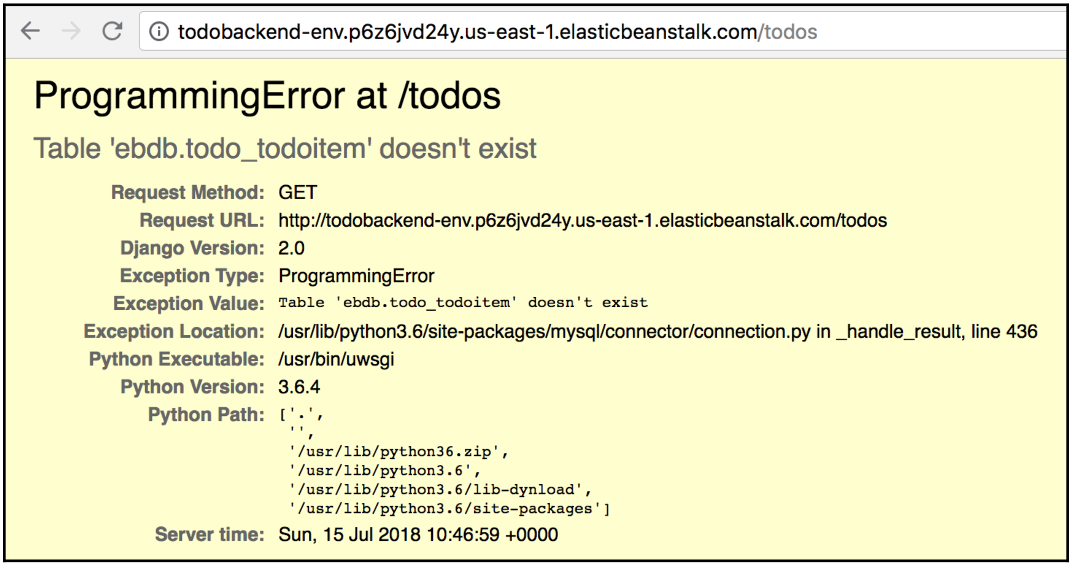
```
GET /

HTTP 200 OK
Allow: GET, HEAD, OPTIONS
Content-Type: application/json
Vary: Accept

{
    "todos": "http://todobackend-env.p6z6jvd24y.us-east-1.elasticbeanstalk.com/todos"
}
```



InterfaceError at /todos

(2003, "2003: Can't connect to MySQL server on 'localhost:3306' (111 Connection refused)", None)

```
    Request Method:  GET
       Request URL:  http://todobackend-env.p6z6jvd24y.us-east-1.elasticbeanstalk.com/todos
    Django Version:  2.0
    Exception Type:  InterfaceError
   Exception Value:  (2003, "2003: Can't connect to MySQL server on 'localhost:3306' (111 Connection refused)", None)
Exception Location:  /usr/lib/python3.6/site-packages/mysql/connector/network.py in open_connection, line 518
 Python Executable:  /usr/bin/uwsgi
    Python Version:  3.6.4
       Python Path:  ['.',
                      '',
                      '/usr/lib/python36.zip',
                      '/usr/lib/python3.6',
                      '/usr/lib/python3.6/lib-dynload',
                      '/usr/lib/python3.6/site-packages']
       Server time:  Sat, 14 Jul 2018 23:42:04 +0000
```

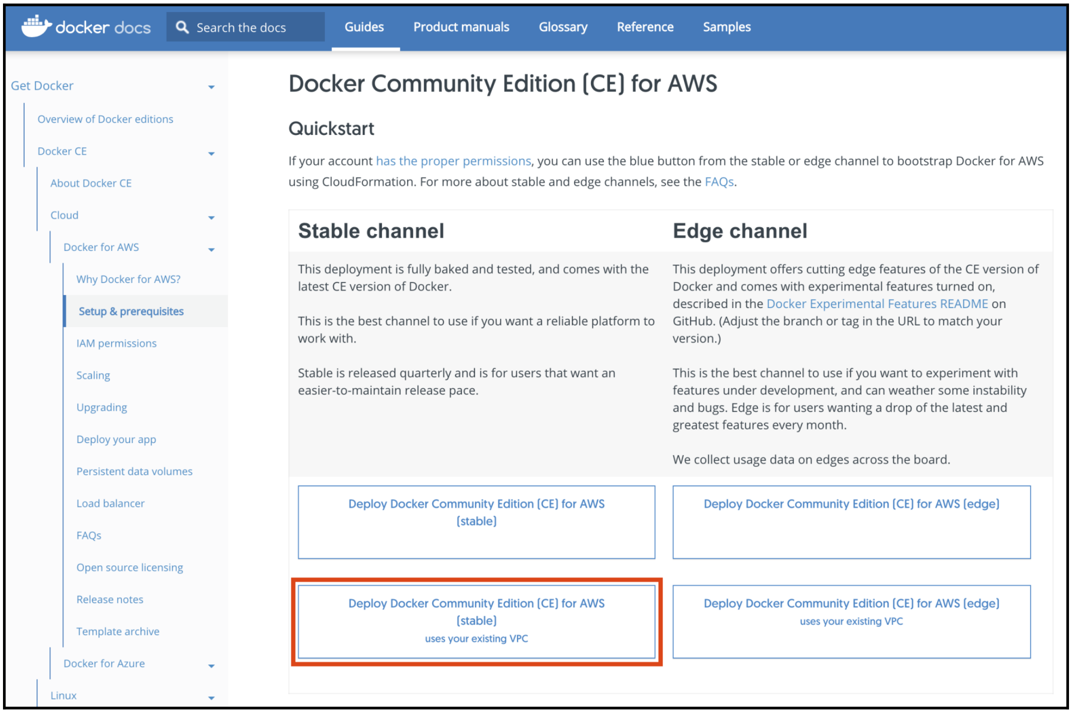


ProgrammingError at /todos

Table 'ebdb.todo_todoitem' doesn't exist

```
    Request Method:  GET
       Request URL:  http://todobackend-env.p6z6jvd24y.us-east-1.elasticbeanstalk.com/todos
    Django Version:  2.0
    Exception Type:  ProgrammingError
   Exception Value:  Table 'ebdb.todo_todoitem' doesn't exist
Exception Location:  /usr/lib/python3.6/site-packages/mysql/connector/connection.py in _handle_result, line 436
 Python Executable:  /usr/bin/uwsgi
    Python Version:  3.6.4
       Python Path:  ['.',
                      '',
                      '/usr/lib/python36.zip',
                      '/usr/lib/python3.6',
                      '/usr/lib/python3.6/lib-dynload',
                      '/usr/lib/python3.6/site-packages']
       Server time:  Sun, 15 Jul 2018 10:46:59 +0000
```

Chapter 16: Docker Swarm in AWS

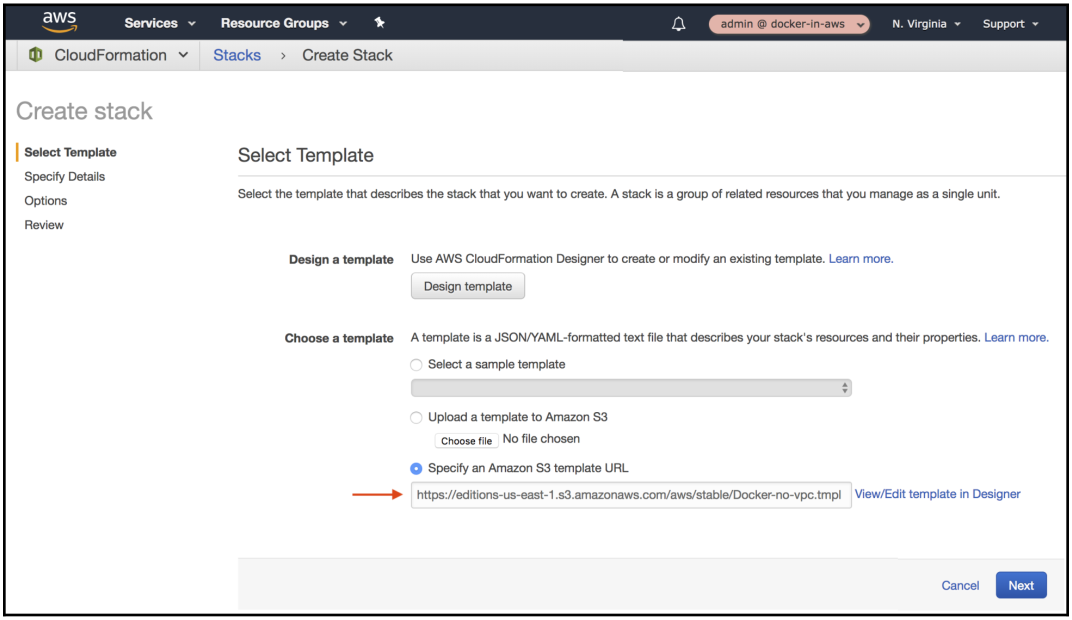


Docker Community Edition (CE) for AWS

Quickstart

If your account has the proper permissions, you can use the blue button from the stable or edge channel to bootstrap Docker for AWS using CloudFormation. For more about stable and edge channels, see the FAQs.

Stable channel	Edge channel
This deployment is fully baked and tested, and comes with the latest CE version of Docker. This is the best channel to use if you want a reliable platform to work with. Stable is released quarterly and is for users that want an easier-to-maintain release pace.	This deployment offers cutting edge features of the CE version of Docker and comes with experimental features turned on, described in the Docker Experimental Features README on GitHub. (Adjust the branch or tag in the URL to match your version.) This is the best channel to use if you want to experiment with features under development, and can weather some instability and bugs. Edge is for users wanting a drop of the latest and greatest features every month. We collect usage data on edges across the board.
Deploy Docker Community Edition (CE) for AWS (stable)	Deploy Docker Community Edition (CE) for AWS (edge)
Deploy Docker Community Edition (CE) for AWS (stable) uses your existing VPC	Deploy Docker Community Edition (CE) for AWS (edge) uses your existing VPC



Create stack

- Select Template
- Specify Details
- Options
- Review

Select Template

Select the template that describes the stack that you want to create. A stack is a group of related resources that you manage as a single unit.

Design a template Use AWS CloudFormation Designer to create or modify an existing template. Learn more.

Design template

Choose a template A template is a JSON/YAML-formatted text file that describes your stack's resources and their properties. Learn more.

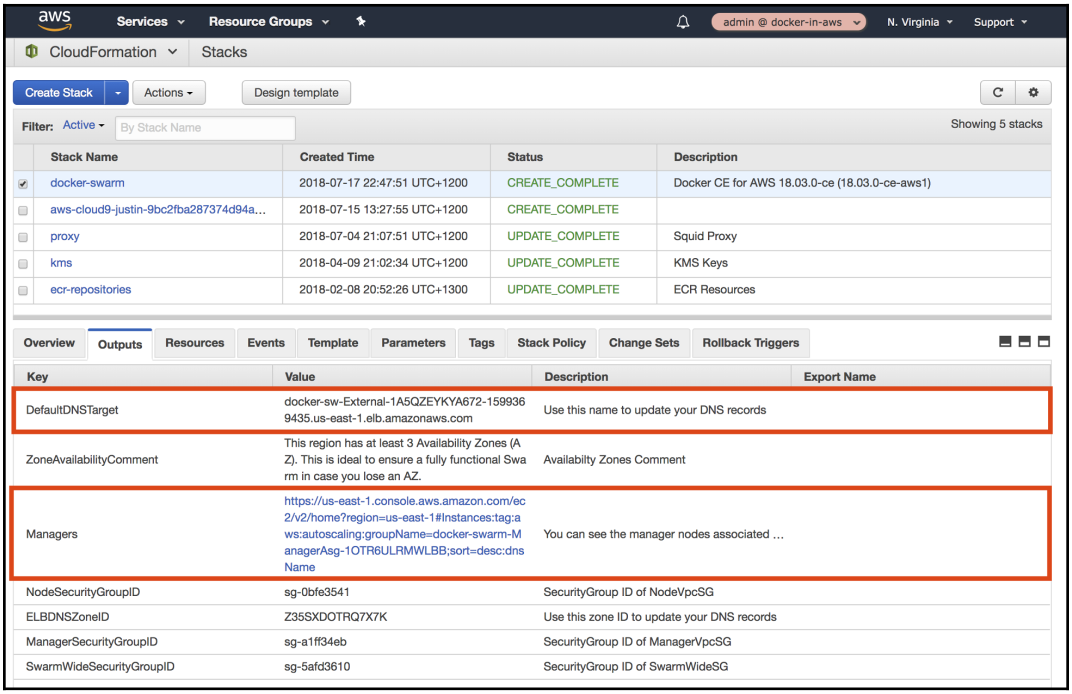
○ Select a sample template

○ Upload a template to Amazon S3

Choose file No file chosen

● Specify an Amazon S3 template URL

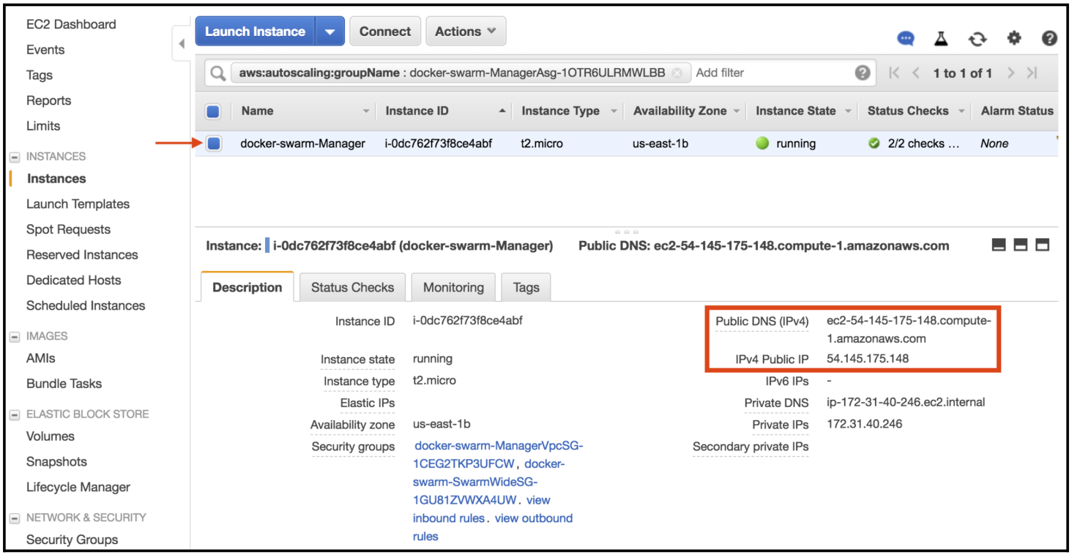
https://editions-us-east-1.s3.amazonaws.com/aws/stable/Docker-no-vpc.tmpl View/Edit template in Designer



Filter: Active By Stack Name Showing 5 stacks

	Stack Name	Created Time	Status	Description
☑	docker-swarm	2018-07-17 22:47:51 UTC+1200	CREATE_COMPLETE	Docker CE for AWS 18.03.0-ce (18.03.0-ce-aws1)
□	aws-cloud9-justin-9bc2fba287374d94a...	2018-07-15 13:27:55 UTC+1200	CREATE_COMPLETE	
□	proxy	2018-07-04 21:07:51 UTC+1200	UPDATE_COMPLETE	Squid Proxy
□	kms	2018-04-09 21:02:34 UTC+1200	UPDATE_COMPLETE	KMS Keys
□	ecr-repositories	2018-02-08 20:52:26 UTC+1300	UPDATE_COMPLETE	ECR Resources

Key	Value	Description	Export Name
DefaultDNSTarget	docker-sw-External-1A5QZEYKYA672-1599369435.us-east-1.elb.amazonaws.com	Use this name to update your DNS records	
ZoneAvailabilityComment	This region has at least 3 Availability Zones (AZ). This is ideal to ensure a fully functional Swarm in case you lose an AZ.	Availabilty Zones Comment	
Managers	https://us-east-1.console.aws.amazon.com/ec2/v2/home?region=us-east-1#Instances:tag:aws:autoscaling:groupName=docker-swarm-ManagerAsg-1OTR6ULRMWLBB;sort=desc:dnsName	You can see the manager nodes associated ...	
NodeSecurityGroupID	sg-0bfe3541	SecurityGroup ID of NodeVpcSG	
ELBDNSZoneID	Z35SXDOTRQ7X7K	Use this zone ID to update your DNS records	
ManagerSecurityGroupID	sg-a1ff34eb	SecurityGroup ID of ManagerVpcSG	
SwarmWideSecurityGroupID	sg-5afd3610	SecurityGroup ID of SwarmWideSG	

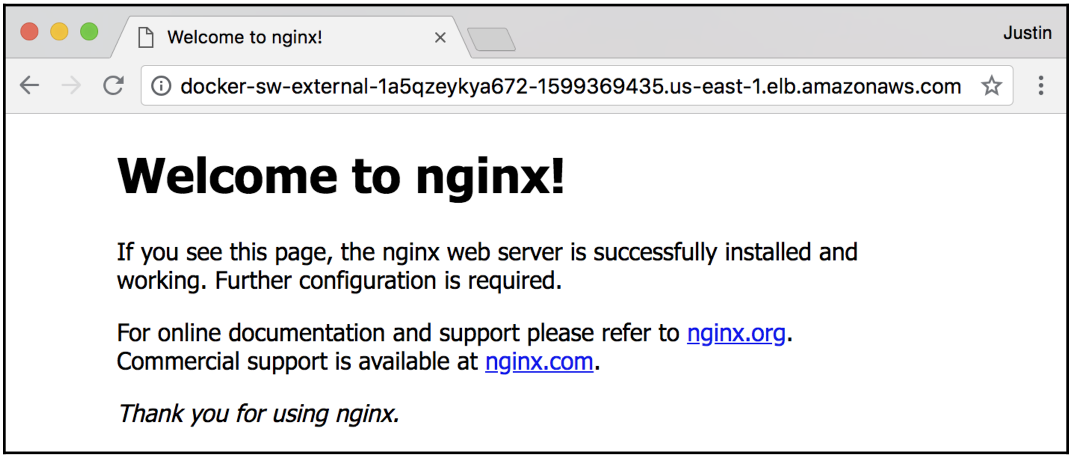


aws:autoscaling:groupName : docker-swarm-ManagerAsg-1OTR6ULRMWLBB

Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks	Alarm Status
docker-swarm-Manager	i-0dc762f73f8ce4abf	t2.micro	us-east-1b	● running	✓ 2/2 checks ...	*None*

Instance: i-0dc762f73f8ce4abf (docker-swarm-Manager)   Public DNS: ec2-54-145-175-148.compute-1.amazonaws.com

Instance ID	i-0dc762f73f8ce4abf	Public DNS (IPv4)	ec2-54-145-175-148.compute-1.amazonaws.com
Instance state	running	IPv4 Public IP	54.145.175.148
Instance type	t2.micro	IPv6 IPs	-
Elastic IPs		Private DNS	ip-172-31-40-246.ec2.internal
Availability zone	us-east-1b	Private IPs	172.31.40.246
Security groups	docker-swarm-ManagerVpcSG-1CEG2TKP3UFCW, docker-swarm-SwarmWideSG-1GU81ZVWXA4UW. view inbound rules. view outbound rules	Secondary private IPs	

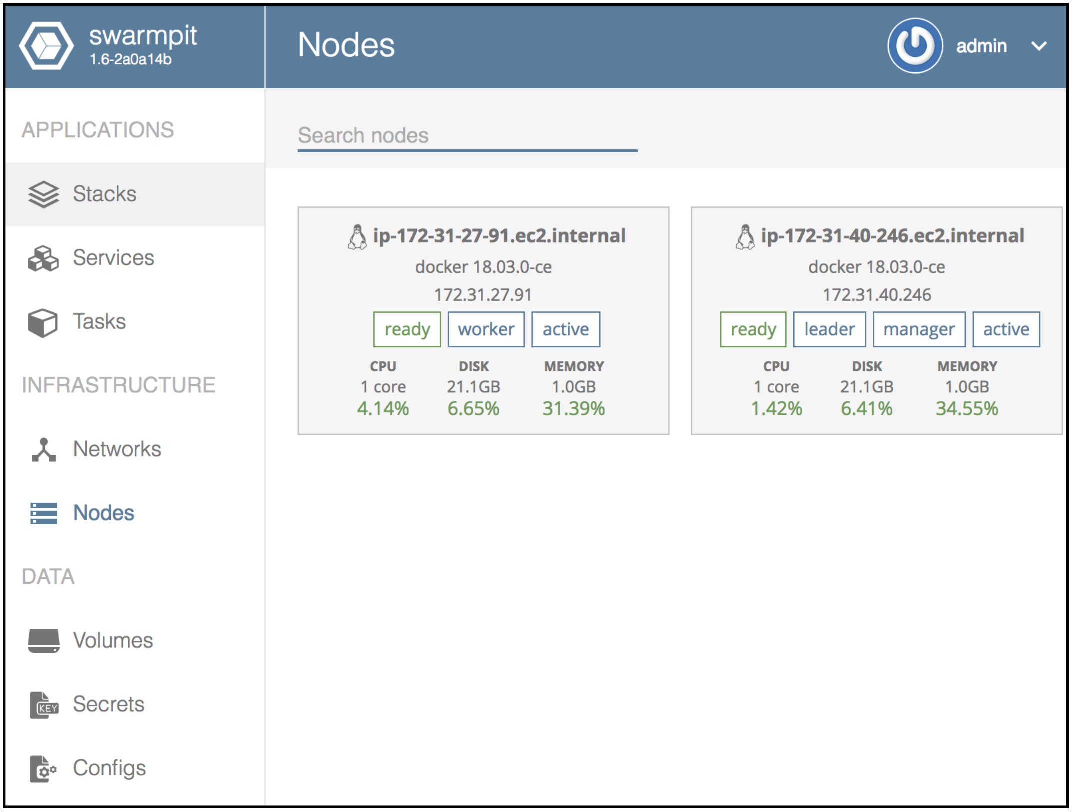

Welcome to nginx!
Justin
docker-sw-external-1a5qzeykya672-1599369435.us-east-1.elb.amazonaws.com

Welcome to nginx!

If you see this page, the nginx web server is successfully installed and working. Further configuration is required.

For online documentation and support please refer to nginx.org.
Commercial support is available at nginx.com.

Thank you for using nginx.

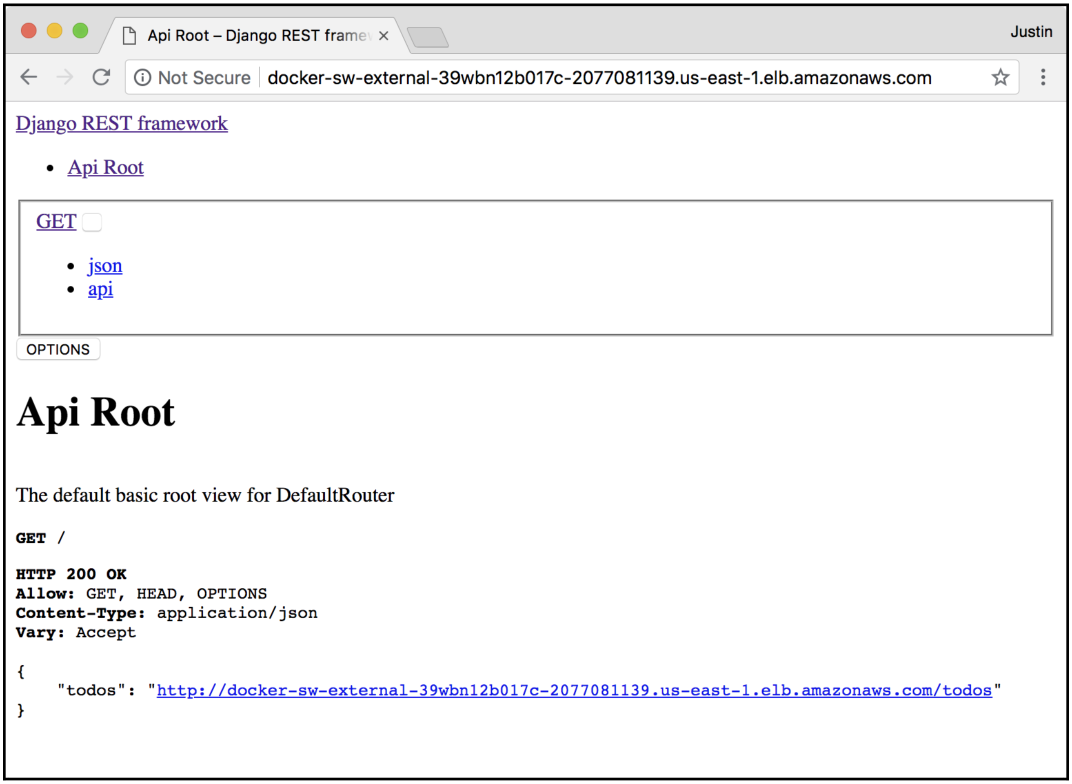


ip-172-31-27-91.ec2.internal
docker 18.03.0-ce
172.31.27.91
ready worker active

CPU	DISK	MEMORY
1 core	21.1GB	1.0GB
4.14%	6.65%	31.39%

ip-172-31-40-246.ec2.internal
docker 18.03.0-ce
172.31.40.246
ready leader manager active

CPU	DISK	MEMORY
1 core	21.1GB	1.0GB
1.42%	6.41%	34.55%



Api Root – Django REST frame
Justin
Not Secure
docker-sw-external-39wbn12b017c-2077081139.us-east-1.elb.amazonaws.com

Django REST framework

- Api Root

GET

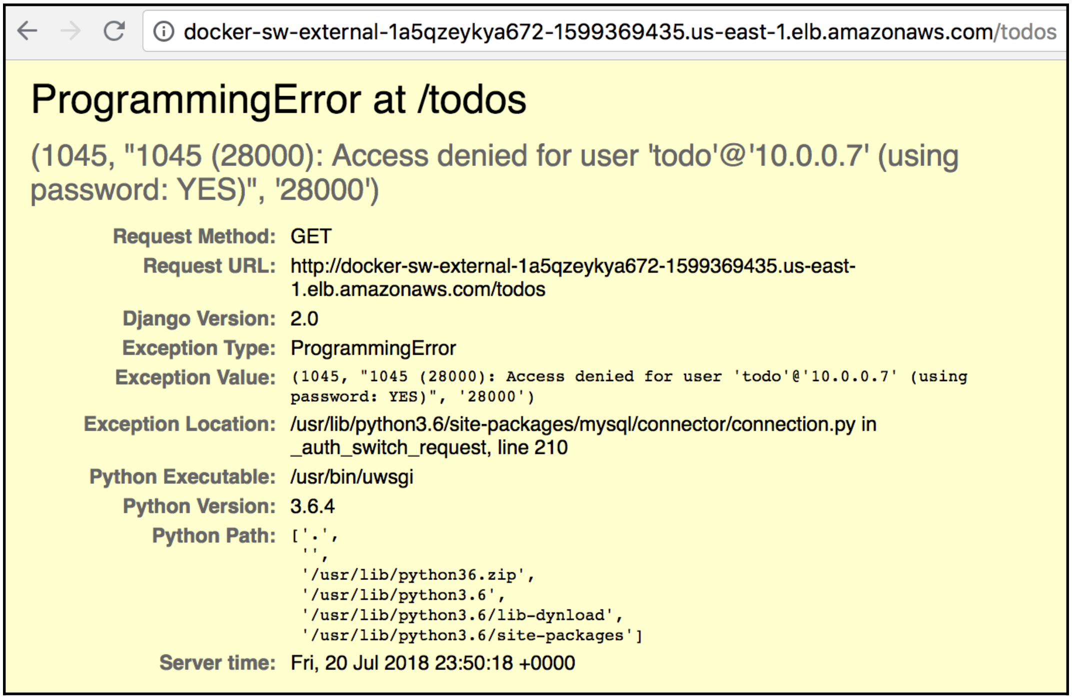
- json
- api

OPTIONS

Api Root

The default basic root view for DefaultRouter

```
GET /

HTTP 200 OK
Allow: GET, HEAD, OPTIONS
Content-Type: application/json
Vary: Accept

{
    "todos": "http://docker-sw-external-39wbn12b017c-2077081139.us-east-1.elb.amazonaws.com/todos"
}
```



docker-sw-external-1a5qzeykya672-1599369435.us-east-1.elb.amazonaws.com/todos

ProgrammingError at /todos

(1045, "1045 (28000): Access denied for user 'todo'@'10.0.0.7' (using password: YES)", '28000')

Request Method: GET

Request URL: http://docker-sw-external-1a5qzeykya672-1599369435.us-east-1.elb.amazonaws.com/todos

Django Version: 2.0

Exception Type: ProgrammingError

Exception Value: `(1045, "1045 (28000): Access denied for user 'todo'@'10.0.0.7' (using password: YES)", '28000')`

Exception Location: /usr/lib/python3.6/site-packages/mysql/connector/connection.py in _auth_switch_request, line 210

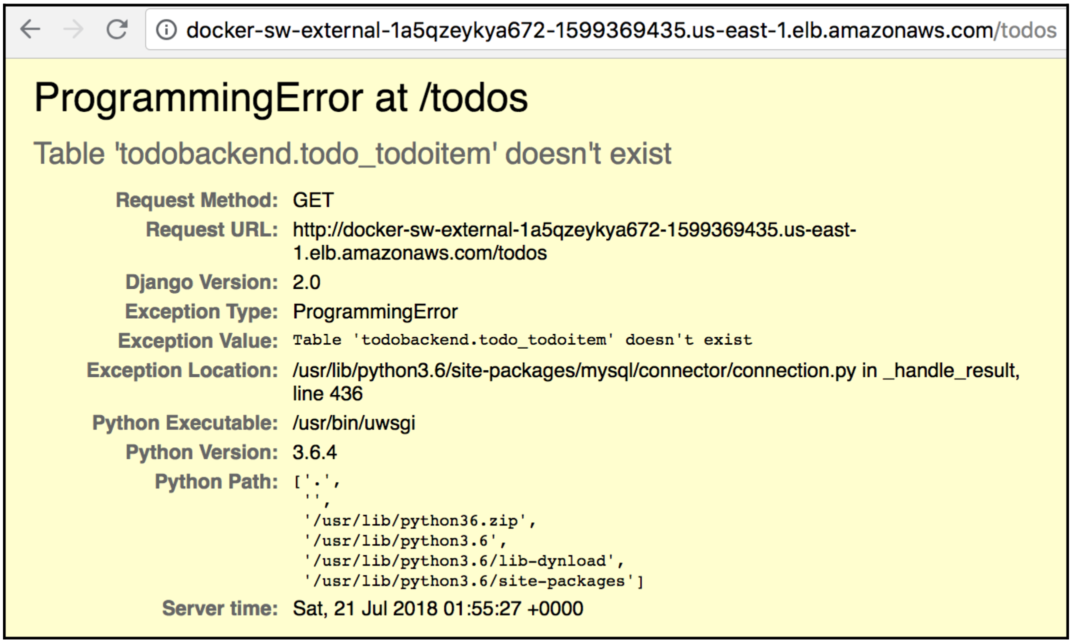
Python Executable: /usr/bin/uwsgi

Python Version: 3.6.4

Python Path:

```
['.',
 '',
 '/usr/lib/python36.zip',
 '/usr/lib/python3.6',
 '/usr/lib/python3.6/lib-dynload',
 '/usr/lib/python3.6/site-packages']
```

Server time: Fri, 20 Jul 2018 23:50:18 +0000



docker-sw-external-1a5qzeykya672-1599369435.us-east-1.elb.amazonaws.com/todos

ProgrammingError at /todos

Table 'todobackend.todo_todoitem' doesn't exist

Request Method: GET

Request URL: http://docker-sw-external-1a5qzeykya672-1599369435.us-east-1.elb.amazonaws.com/todos

Django Version: 2.0

Exception Type: ProgrammingError

Exception Value: `Table 'todobackend.todo_todoitem' doesn't exist`

Exception Location: /usr/lib/python3.6/site-packages/mysql/connector/connection.py in _handle_result, line 436

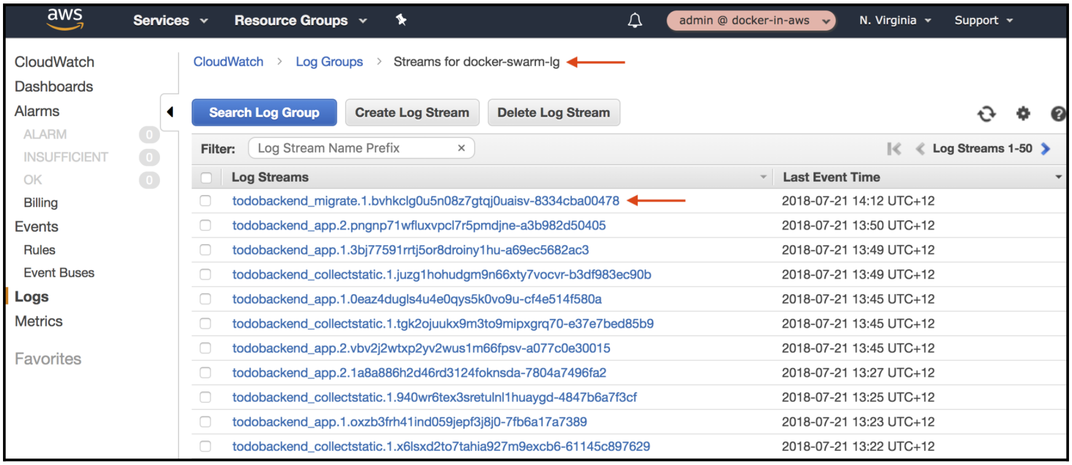
Python Executable: /usr/bin/uwsgi

Python Version: 3.6.4

Python Path:

```
['.',
 '',
 '/usr/lib/python36.zip',
 '/usr/lib/python3.6',
 '/usr/lib/python3.6/lib-dynload',
 '/usr/lib/python3.6/site-packages']
```

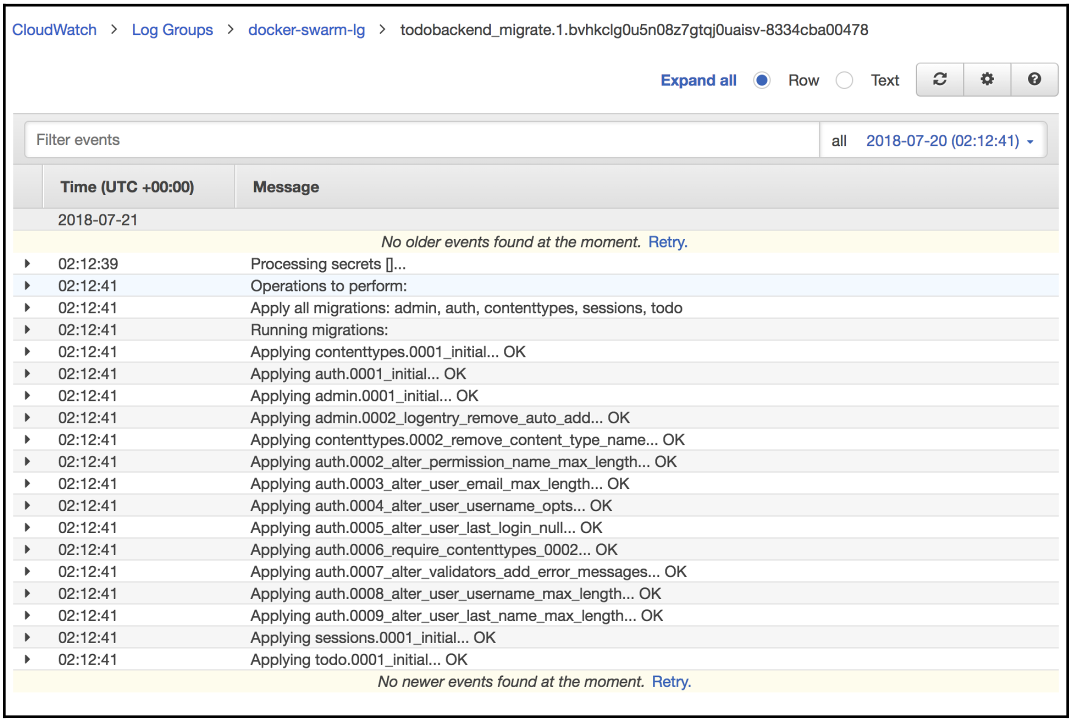
Server time: Sat, 21 Jul 2018 01:55:27 +0000



CloudWatch > Log Groups > Streams for docker-swarm-lg

Filter: Log Stream Name Prefix ×

□	Log Streams	Last Event Time
□	todobackend_migrate.1.bvhkclg0u5n08z7gtqj0uaisv-8334cba00478	2018-07-21 14:12 UTC+12
□	todobackend_app.2.pngnp71wfluxvpcl7r5pmdjne-a3b982d50405	2018-07-21 13:50 UTC+12
□	todobackend_app.1.3bj77591rrtj5or8droiny1hu-a69ec5682ac3	2018-07-21 13:49 UTC+12
□	todobackend_collectstatic.1.juzg1hohudgm9n66xty7vocvr-b3df983ec90b	2018-07-21 13:49 UTC+12
□	todobackend_app.1.0eaz4dugls4u4e0qys5k0vo9u-cf4e514f580a	2018-07-21 13:45 UTC+12
□	todobackend_collectstatic.1.tgk2ojuukx9m3to9mipxgrq70-e37e7bed85b9	2018-07-21 13:45 UTC+12
□	todobackend_app.2.vbv2j2wtxp2yv2wus1m66fpsv-a077c0e30015	2018-07-21 13:45 UTC+12
□	todobackend_app.2.1a8a886h2d46rd3124foknsda-7804a7496fa2	2018-07-21 13:27 UTC+12
□	todobackend_collectstatic.1.940wr6tex3sretulnl1huaygd-4847b6a7f3cf	2018-07-21 13:25 UTC+12
□	todobackend_app.1.oxzb3frh41ind059jepf3j8j0-7fb6a17a7389	2018-07-21 13:23 UTC+12
□	todobackend_collectstatic.1.x6lsxd2to7tahia927m9excb6-61145c897629	2018-07-21 13:22 UTC+12

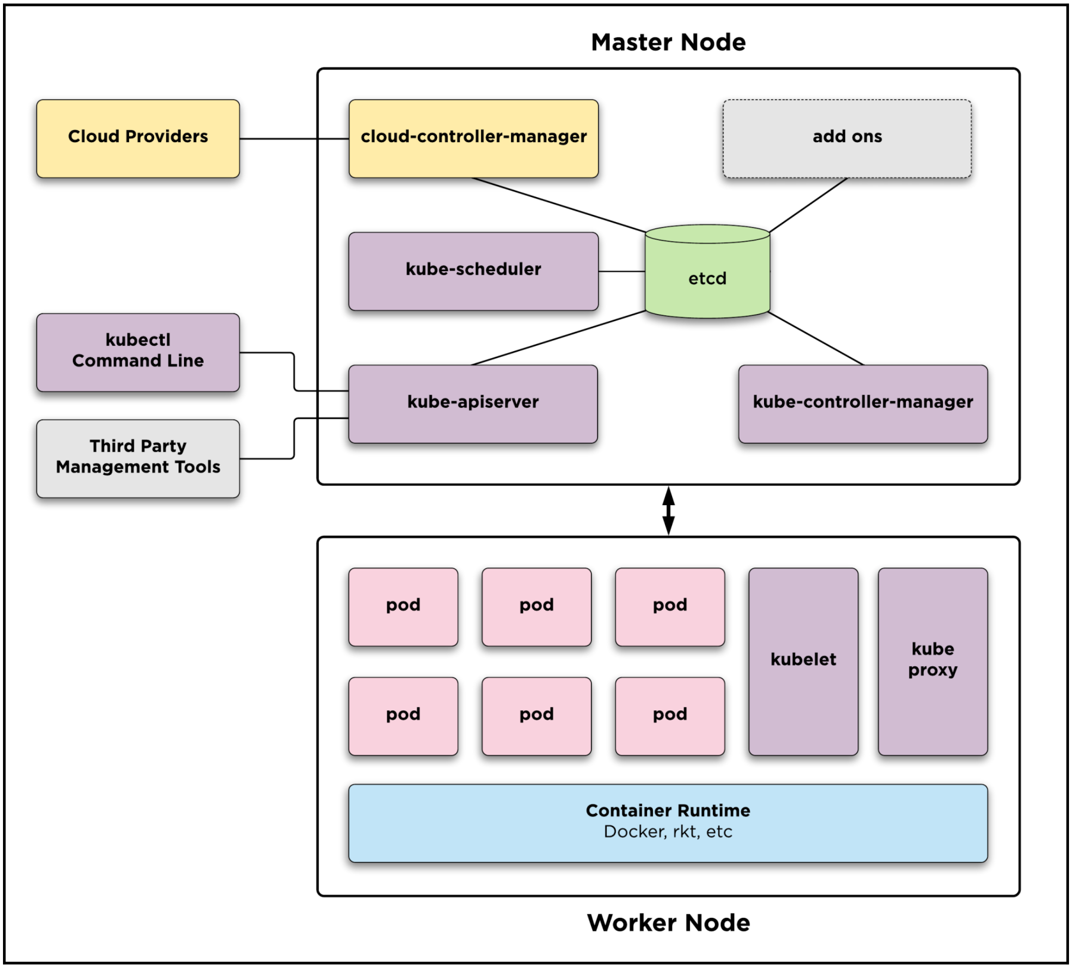


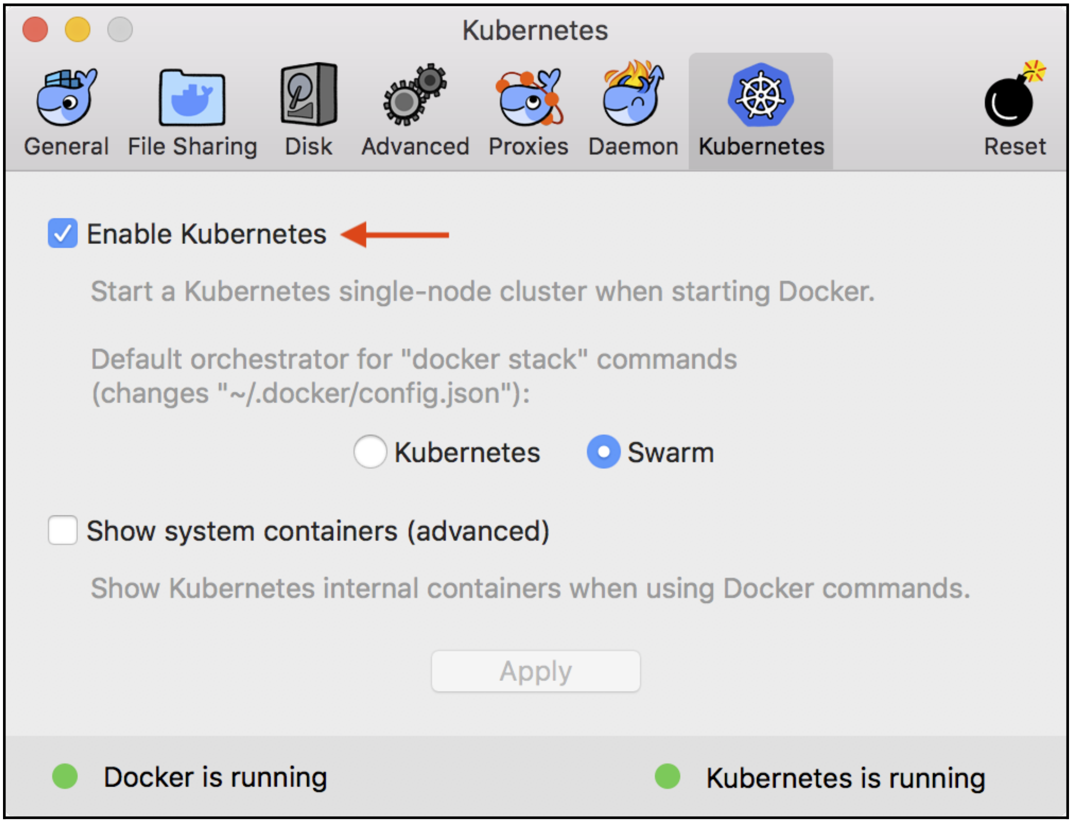
CloudWatch > Log Groups > docker-swarm-lg > todobackend_migrate.1.bvhkclg0u5n08z7gtqj0uaisv-8334cba00478

Filter events | all 2018-07-20 (02:12:41)

Time (UTC +00:00)	Message
2018-07-21	
	No older events found at the moment. Retry.
02:12:39	Processing secrets []...
02:12:41	Operations to perform:
02:12:41	Apply all migrations: admin, auth, contenttypes, sessions, todo
02:12:41	Running migrations:
02:12:41	Applying contenttypes.0001_initial... OK
02:12:41	Applying auth.0001_initial... OK
02:12:41	Applying admin.0001_initial... OK
02:12:41	Applying admin.0002_logentry_remove_auto_add... OK
02:12:41	Applying contenttypes.0002_remove_content_type_name... OK
02:12:41	Applying auth.0002_alter_permission_name_max_length... OK
02:12:41	Applying auth.0003_alter_user_email_max_length... OK
02:12:41	Applying auth.0004_alter_user_username_opts... OK
02:12:41	Applying auth.0005_alter_user_last_login_null... OK
02:12:41	Applying auth.0006_require_contenttypes_0002... OK
02:12:41	Applying auth.0007_alter_validators_add_error_messages... OK
02:12:41	Applying auth.0008_alter_user_username_max_length... OK
02:12:41	Applying auth.0009_alter_user_last_name_max_length... OK
02:12:41	Applying sessions.0001_initial... OK
02:12:41	Applying todo.0001_initial... OK
	No newer events found at the moment. Retry.

Chapter 17: Elastic Kubernetes Service





☑ Enable Kubernetes

Start a Kubernetes single-node cluster when starting Docker.

Default orchestrator for "docker stack" commands
(changes "~/.docker/config.json"):

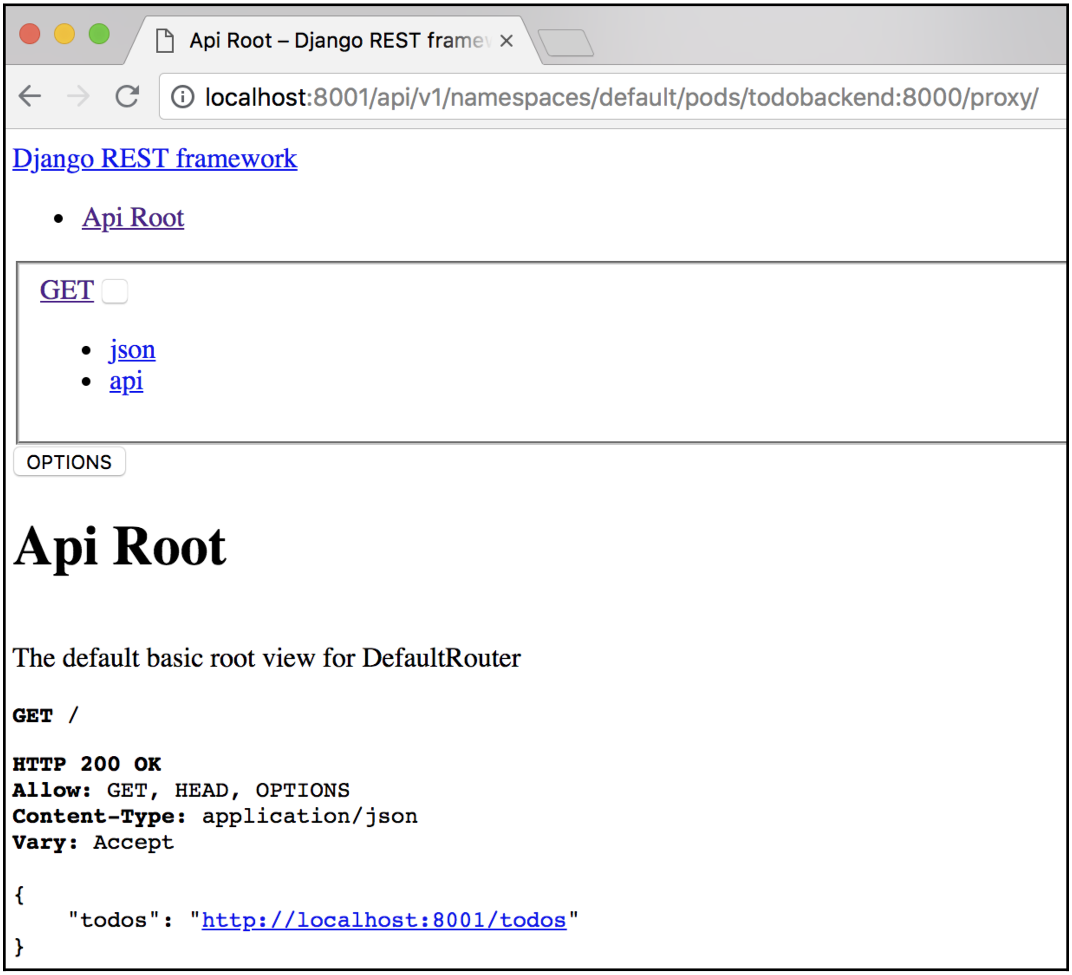
○ Kubernetes ● Swarm

□ Show system containers (advanced)

Show Kubernetes internal containers when using Docker commands.

● Docker is running

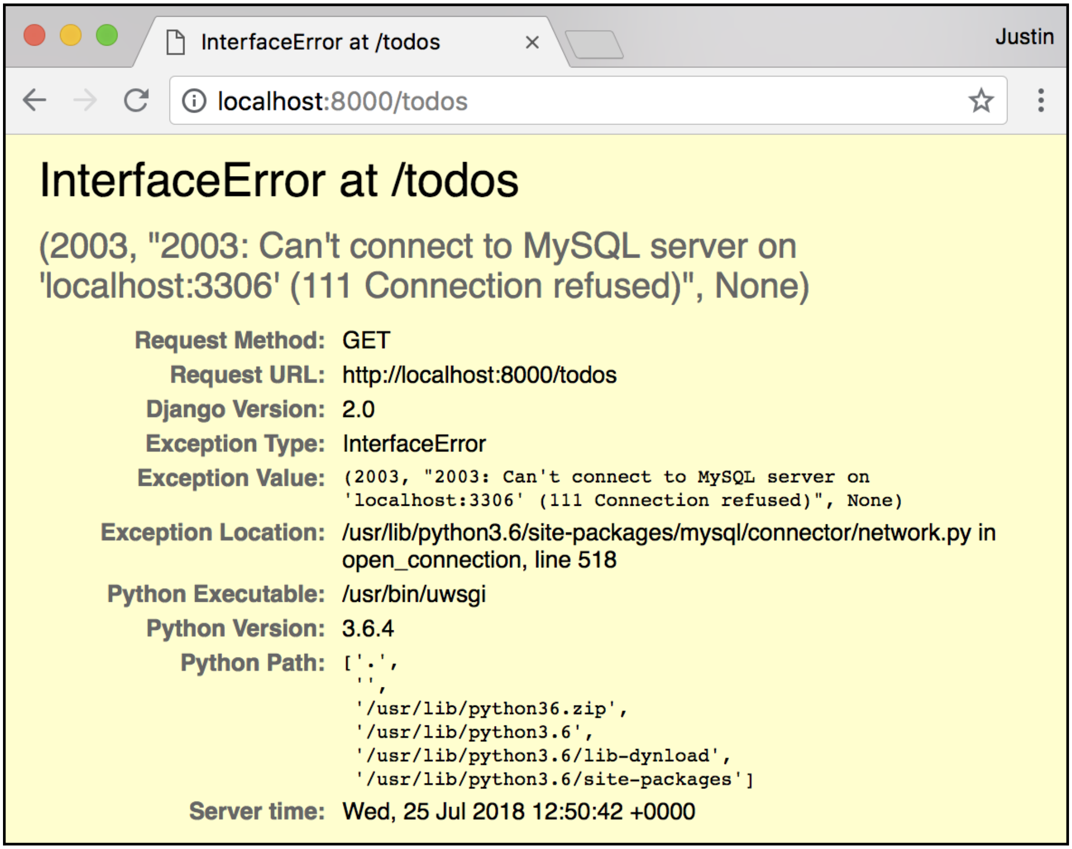
● Kubernetes is running


Api Root – Django REST framew
localhost:8001/api/v1/namespaces/default/pods/todobackend:8000/proxy/
Django REST framework
Api Root
GET
json
api
OPTIONS

Api Root

The default basic root view for DefaultRouter

```
GET /

HTTP 200 OK
Allow: GET, HEAD, OPTIONS
Content-Type: application/json
Vary: Accept

{
    "todos": "http://localhost:8001/todos"
}
```



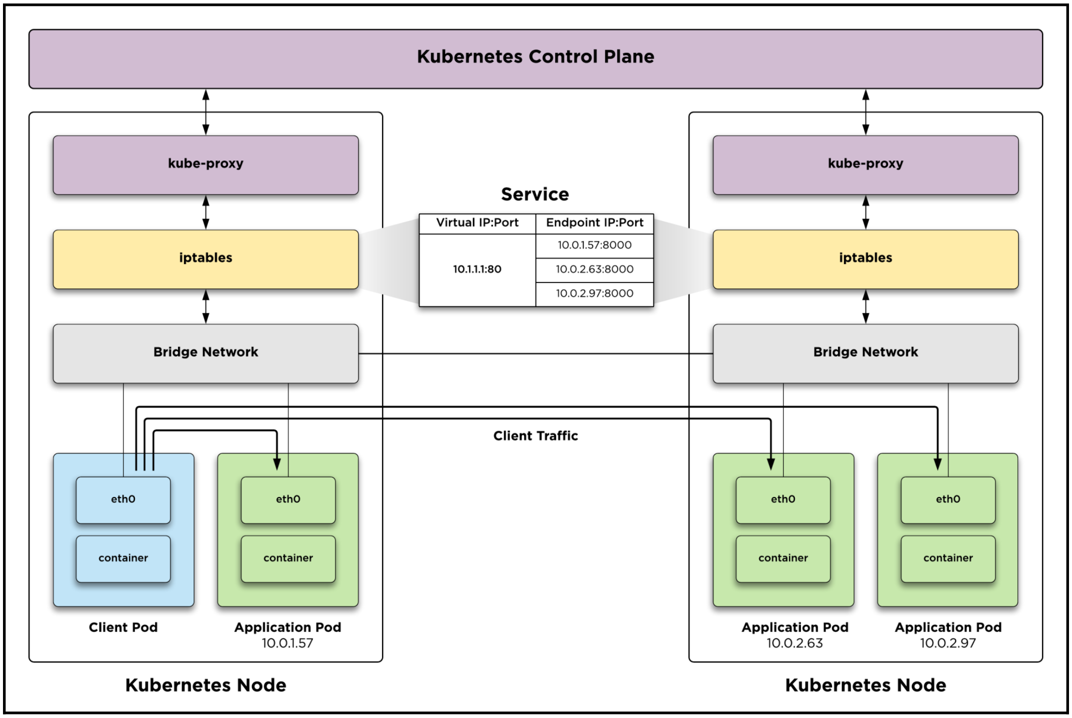
InterfaceError at /todos

(2003, "2003: Can't connect to MySQL server on 'localhost:3306' (111 Connection refused)", None)

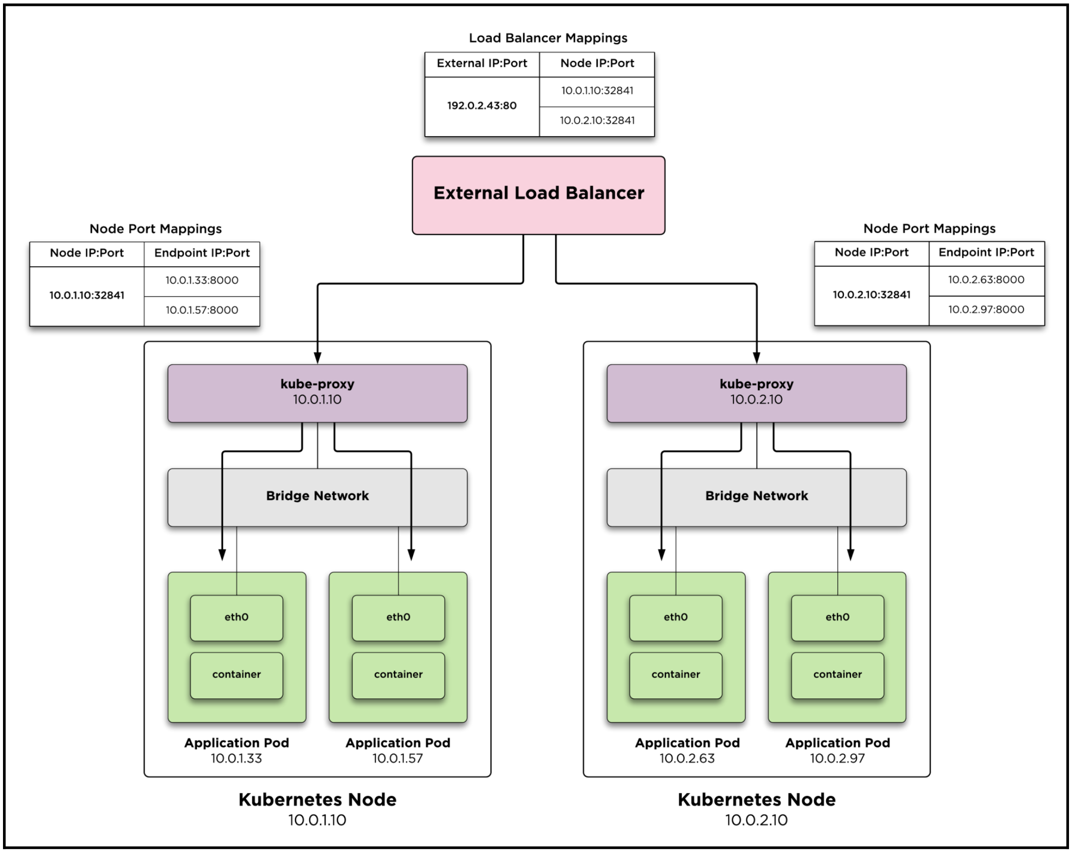
Request Method:	GET
Request URL:	http://localhost:8000/todos
Django Version:	2.0
Exception Type:	InterfaceError
Exception Value:	`(2003, "2003: Can't connect to MySQL server on 'localhost:3306' (111 Connection refused)", None)`
Exception Location:	/usr/lib/python3.6/site-packages/mysql/connector/network.py in open_connection, line 518
Python Executable:	/usr/bin/uwsgi
Python Version:	3.6.4

Python Path:	`['.',`
	`'',`
	`'/usr/lib/python36.zip',`
	`'/usr/lib/python3.6',`
	`'/usr/lib/python3.6/lib-dynload',`
	`'/usr/lib/python3.6/site-packages']`

Server time:	Wed, 25 Jul 2018 12:50:42 +0000



Virtual IP:Port	Endpoint IP:Port
10.1.1.1:80	10.0.1.57:8000
	10.0.2.63:8000
	10.0.2.97:8000



Load Balancer Mappings

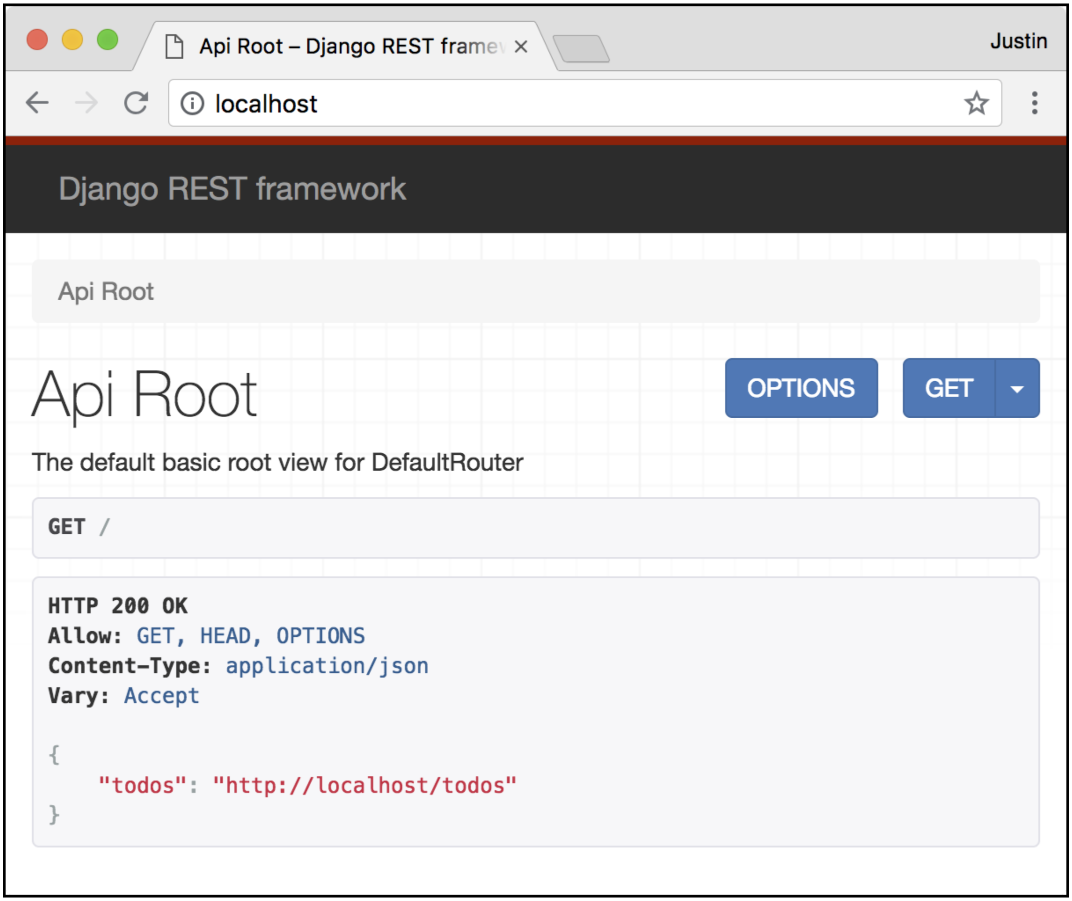
External IP:Port	Node IP:Port
192.0.2.43:80	10.0.1.10:32841
	10.0.2.10:32841

Node Port Mappings

Node IP:Port	Endpoint IP:Port
10.0.1.10:32841	10.0.1.33:8000
	10.0.1.57:8000

Node Port Mappings

Node IP:Port	Endpoint IP:Port
10.0.2.10:32841	10.0.2.63:8000
	10.0.2.97:8000

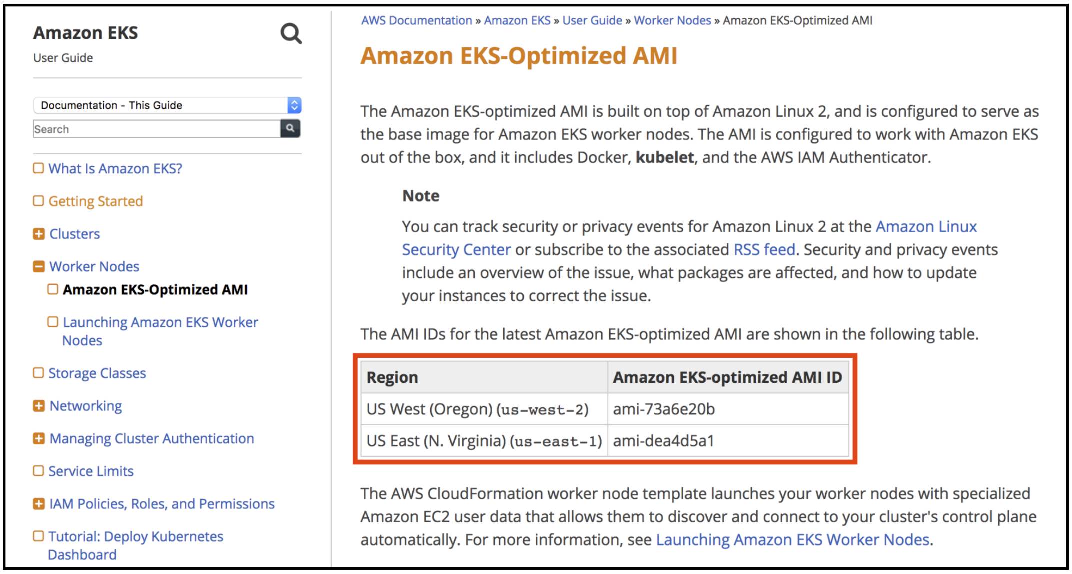


Api Root

The default basic root view for DefaultRouter

```
GET /
```

```
HTTP 200 OK
Allow: GET, HEAD, OPTIONS
Content-Type: application/json
Vary: Accept

{
    "todos": "http://localhost/todos"
}
```


Amazon EKS
User Guide
Documentation - This Guide
Search
What Is Amazon EKS?
Getting Started
Clusters
Worker Nodes
Amazon EKS-Optimized AMI
Launching Amazon EKS Worker Nodes
Storage Classes
Networking
Managing Cluster Authentication
Service Limits
IAM Policies, Roles, and Permissions
Tutorial: Deploy Kubernetes Dashboard
AWS Documentation » Amazon EKS » User Guide » Worker Nodes » Amazon EKS-Optimized AMI

Amazon EKS-Optimized AMI

The Amazon EKS-optimized AMI is built on top of Amazon Linux 2, and is configured to serve as the base image for Amazon EKS worker nodes. The AMI is configured to work with Amazon EKS out of the box, and it includes Docker, **kubelet**, and the AWS IAM Authenticator.

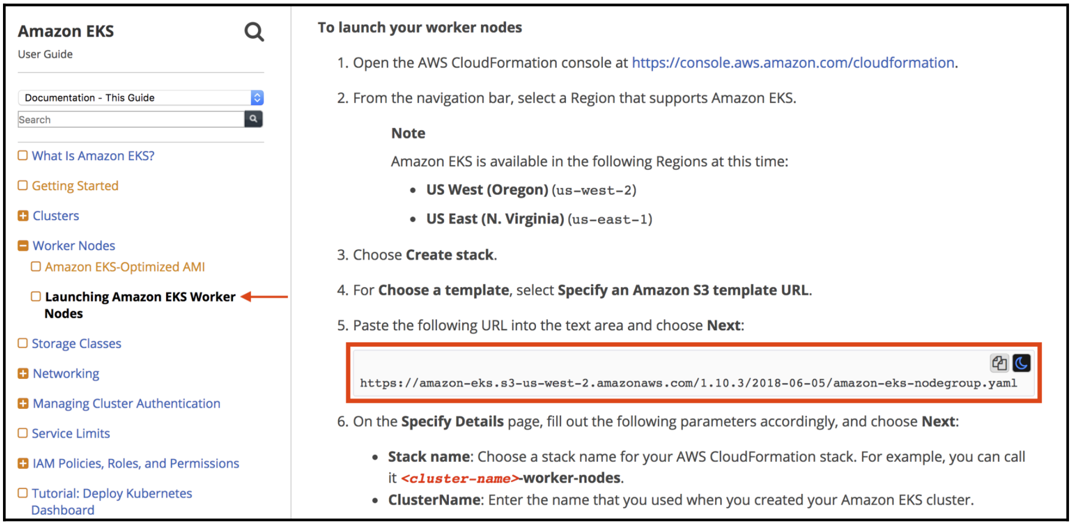
Note

You can track security or privacy events for Amazon Linux 2 at the Amazon Linux Security Center or subscribe to the associated RSS feed. Security and privacy events include an overview of the issue, what packages are affected, and how to update your instances to correct the issue.

The AMI IDs for the latest Amazon EKS-optimized AMI are shown in the following table.

Region	Amazon EKS-optimized AMI ID
US West (Oregon) (`us-west-2`)	ami-73a6e20b
US East (N. Virginia) (`us-east-1`)	ami-dea4d5a1

The AWS CloudFormation worker node template launches your worker nodes with specialized Amazon EC2 user data that allows them to discover and connect to your cluster's control plane automatically. For more information, see Launching Amazon EKS Worker Nodes.


Amazon EKS
User Guide
Documentation - This Guide
Search
What Is Amazon EKS?
Getting Started
Clusters
Worker Nodes
Amazon EKS-Optimized AMI
Launching Amazon EKS Worker Nodes
Storage Classes
Networking
Managing Cluster Authentication
Service Limits
IAM Policies, Roles, and Permissions
Tutorial: Deploy Kubernetes Dashboard

To launch your worker nodes

1. Open the AWS CloudFormation console at https://console.aws.amazon.com/cloudformation.
2. From the navigation bar, select a Region that supports Amazon EKS.

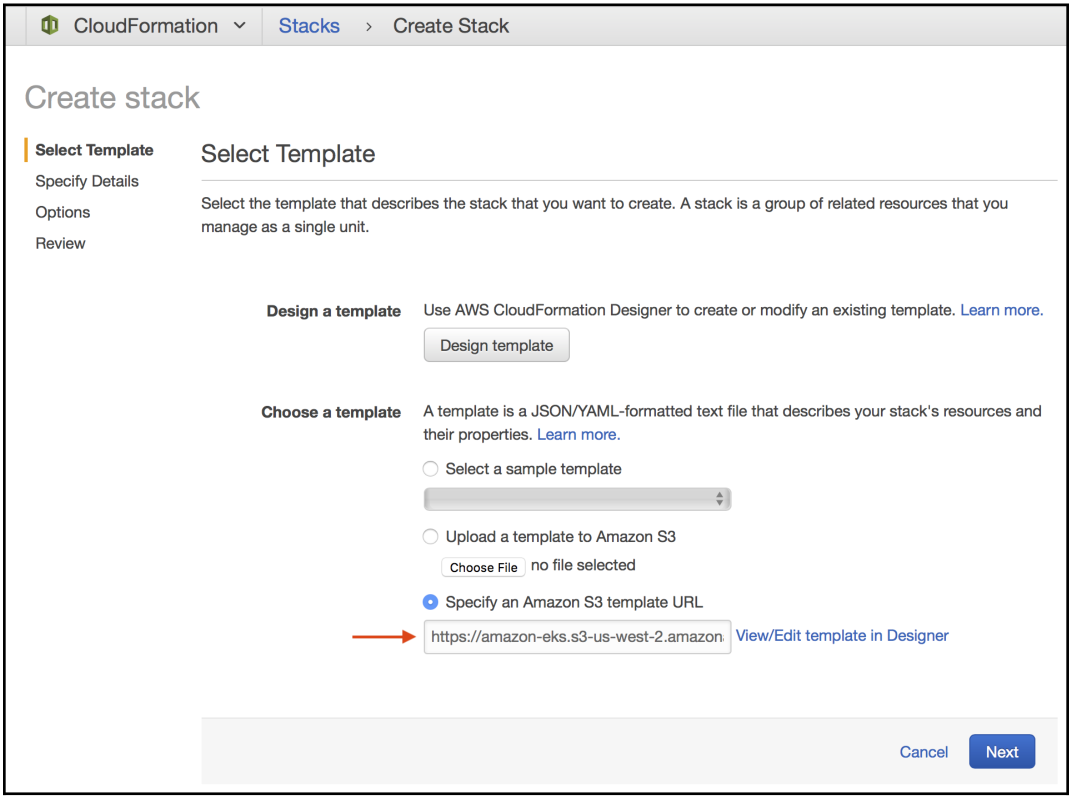
   Note

   Amazon EKS is available in the following Regions at this time:

   - **US West (Oregon)** (`us-west-2`)
   - **US East (N. Virginia)** (`us-east-1`)
3. Choose **Create stack**.
4. For **Choose a template**, select **Specify an Amazon S3 template URL**.
5. Paste the following URL into the text area and choose **Next**:

```
https://amazon-eks.s3-us-west-2.amazonaws.com/1.10.3/2018-06-05/amazon-eks-nodegroup.yaml
```

6. On the **Specify Details** page, fill out the following parameters accordingly, and choose **Next**:
   - **Stack name**: Choose a stack name for your AWS CloudFormation stack. For example, you can call it *<cluster-name>*-**worker-nodes**.
   - **ClusterName**: Enter the name that you used when you created your Amazon EKS cluster.



CloudFormation › Stacks › Create Stack

Create stack

- Select Template
- Specify Details
- Options
- Review

Select Template

Select the template that describes the stack that you want to create. A stack is a group of related resources that you manage as a single unit.

Design a template Use AWS CloudFormation Designer to create or modify an existing template. Learn more.

Design template

Choose a template A template is a JSON/YAML-formatted text file that describes your stack's resources and their properties. Learn more.

○ Select a sample template

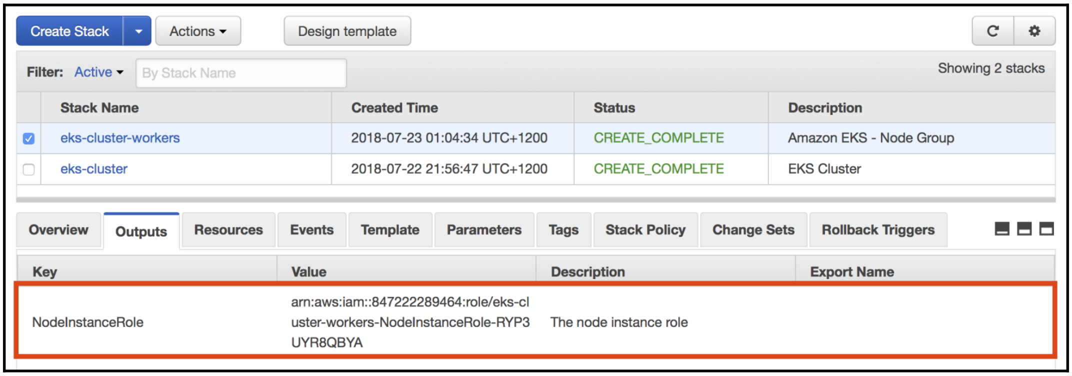
○ Upload a template to Amazon S3

Choose File no file selected

● Specify an Amazon S3 template URL

https://amazon-eks.s3-us-west-2.amazon: View/Edit template in Designer

Cancel Next

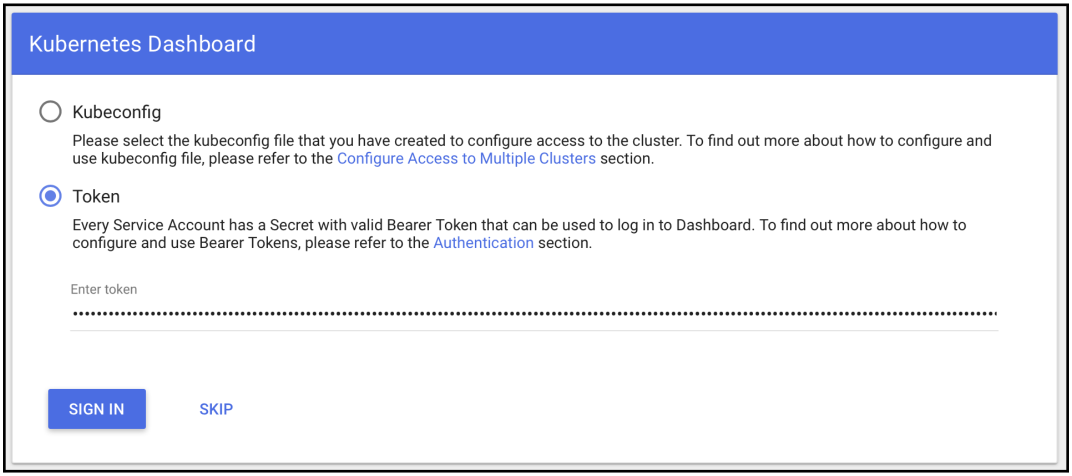


Filter: Active By Stack Name

Showing 2 stacks

	Stack Name	Created Time	Status	Description
☑	eks-cluster-workers	2018-07-23 01:04:34 UTC+1200	CREATE_COMPLETE	Amazon EKS - Node Group
□	eks-cluster	2018-07-22 21:56:47 UTC+1200	CREATE_COMPLETE	EKS Cluster

Key	Value	Description	Export Name
NodeInstanceRole	arn:aws:iam::847222289464:role/eks-cluster-workers-NodeInstanceRole-RYP3UYR8QBYA	The node instance role	



Kubernetes Dashboard

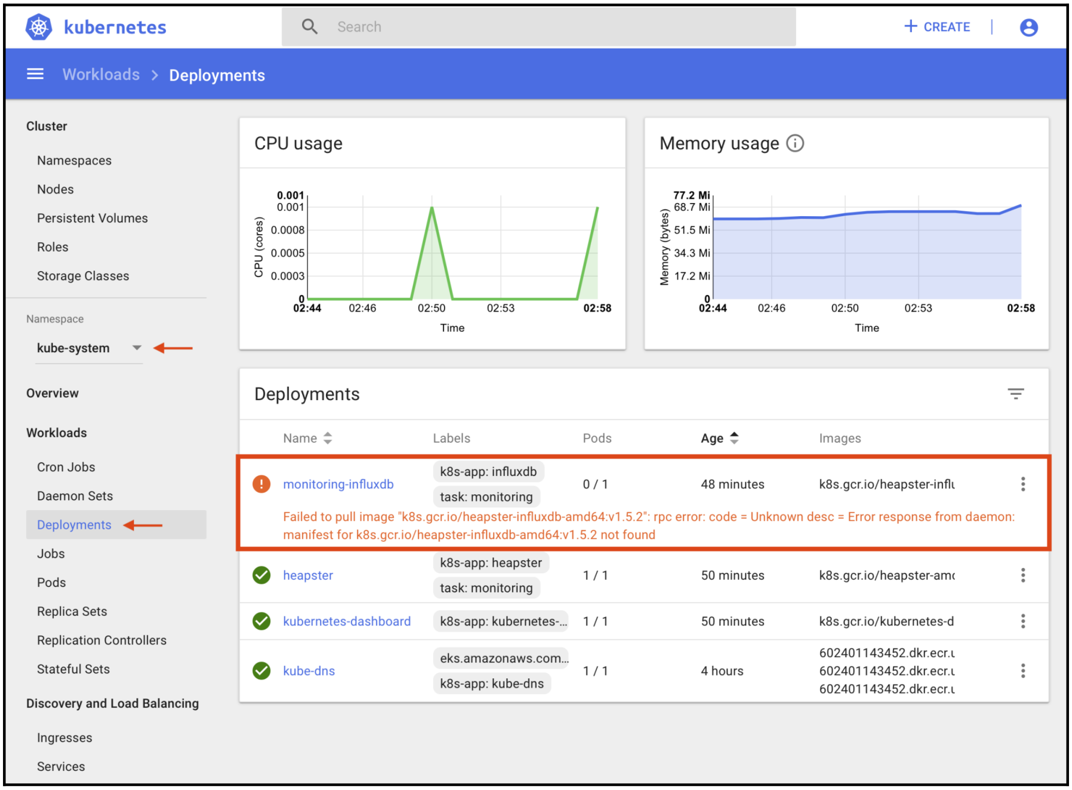
○ Kubeconfig

Please select the kubeconfig file that you have created to configure access to the cluster. To find out more about how to configure and use kubeconfig file, please refer to the Configure Access to Multiple Clusters section.

● Token

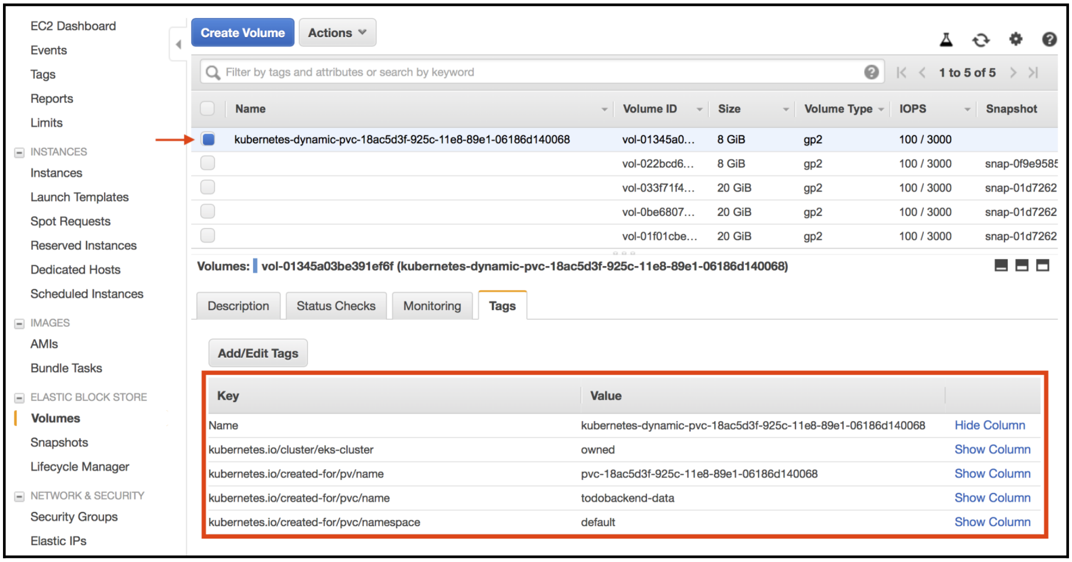
Every Service Account has a Secret with valid Bearer Token that can be used to log in to Dashboard. To find out more about how to configure and use Bearer Tokens, please refer to the Authentication section.

Enter token



Deployments

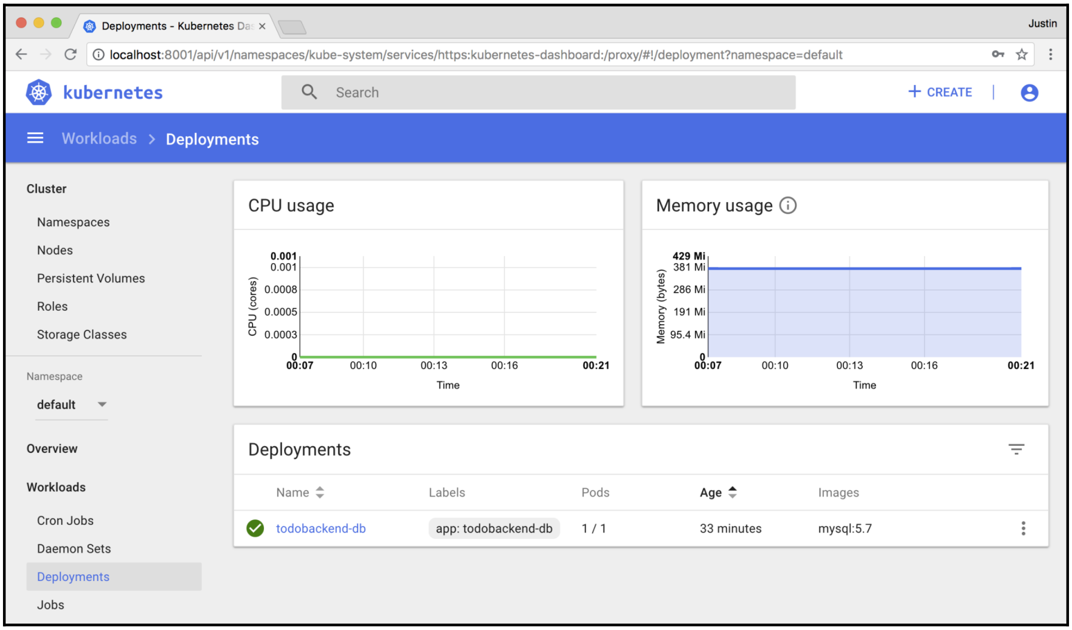
Name	Labels	Pods	Age	Images
monitoring-influxdb	k8s-app: influxdb task: monitoring	0 / 1	48 minutes	k8s.gcr.io/heapster-influ
Failed to pull image "k8s.gcr.io/heapster-influxdb-amd64:v1.5.2": rpc error: code = Unknown desc = Error response from daemon: manifest for k8s.gcr.io/heapster-influxdb-amd64:v1.5.2 not found				
heapster	k8s-app: heapster task: monitoring	1 / 1	50 minutes	k8s.gcr.io/heapster-amc
kubernetes-dashboard	k8s-app: kubernetes-...	1 / 1	50 minutes	k8s.gcr.io/kubernetes-d
kube-dns	eks.amazonaws.com... k8s-app: kube-dns	1 / 1	4 hours	602401143452.dkr.ecr.u 602401143452.dkr.ecr.u 602401143452.dkr.ecr.u



Name	Volume ID	Size	Volume Type	IOPS	Snapshot
kubernetes-dynamic-pvc-18ac5d3f-925c-11e8-89e1-06186d140068	vol-01345a0...	8 GiB	gp2	100 / 3000	
	vol-022bcd6...	8 GiB	gp2	100 / 3000	snap-0f9e958£
	vol-033f71f4...	20 GiB	gp2	100 / 3000	snap-01d7262
	vol-0be6807...	20 GiB	gp2	100 / 3000	snap-01d7262
	vol-01f01cbe...	20 GiB	gp2	100 / 3000	snap-01d7262

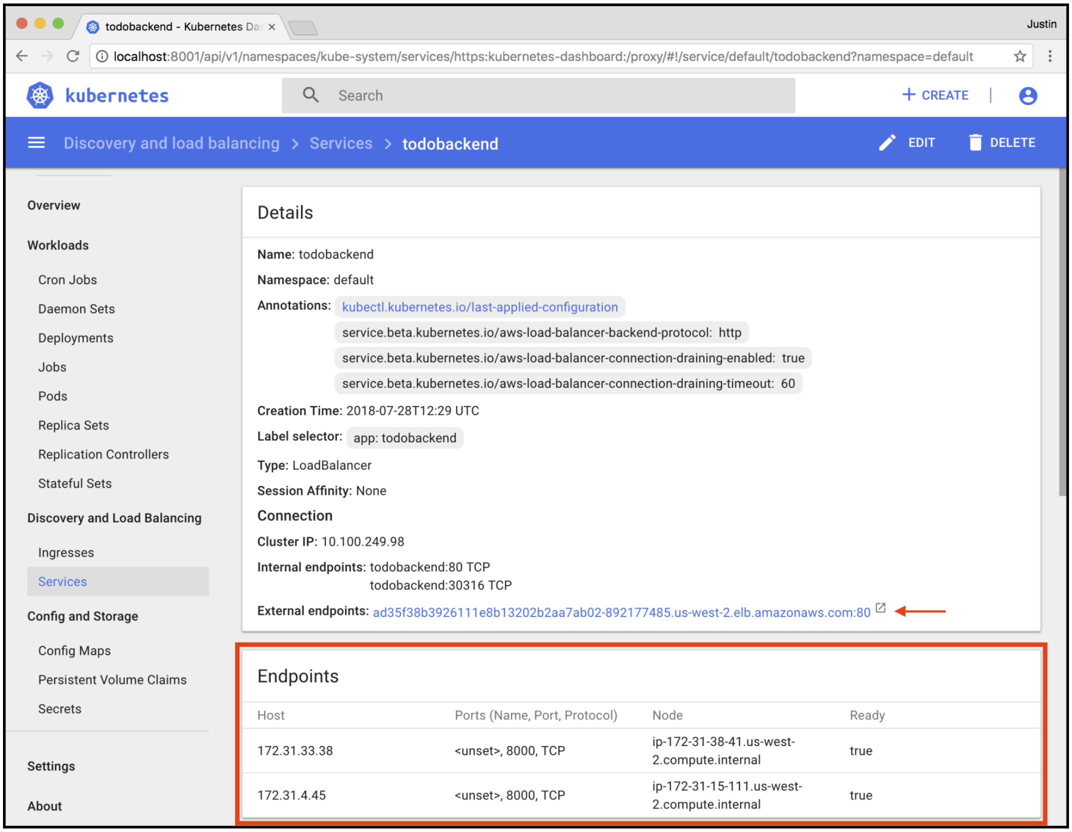
Volumes: vol-01345a03be391ef6f (kubernetes-dynamic-pvc-18ac5d3f-925c-11e8-89e1-06186d140068)

Key	Value	
Name	kubernetes-dynamic-pvc-18ac5d3f-925c-11e8-89e1-06186d140068	Hide Column
kubernetes.io/cluster/eks-cluster	owned	Show Column
kubernetes.io/created-for/pv/name	pvc-18ac5d3f-925c-11e8-89e1-06186d140068	Show Column
kubernetes.io/created-for/pvc/name	todobackend-data	Show Column
kubernetes.io/created-for/pvc/namespace	default	Show Column



Deployments

Name	Labels	Pods	Age	Images
✓ todobackend-db	app: todobackend-db	1 / 1	33 minutes	mysql:5.7


todobackend - Kubernetes Da ×
Justin
localhost:8001/api/v1/namespaces/kube-system/services/https:kubernetes-dashboard:/proxy/#!/service/default/todobackend?namespace=default
kubernetes
Search
+ CREATE
Discovery and load balancing > Services > todobackend
EDIT
DELETE
Overview
Workloads
Cron Jobs
Daemon Sets
Deployments
Jobs
Pods
Replica Sets
Replication Controllers
Stateful Sets
Discovery and Load Balancing
Ingresses
Services
Config and Storage
Config Maps
Persistent Volume Claims
Secrets
Settings
About

Details

Name: todobackend

Namespace: default

Annotations: kubectl.kubernetes.io/last-applied-configuration
service.beta.kubernetes.io/aws-load-balancer-backend-protocol: http
service.beta.kubernetes.io/aws-load-balancer-connection-draining-enabled: true
service.beta.kubernetes.io/aws-load-balancer-connection-draining-timeout: 60

Creation Time: 2018-07-28T12:29 UTC

Label selector: app: todobackend

Type: LoadBalancer

Session Affinity: None

Connection

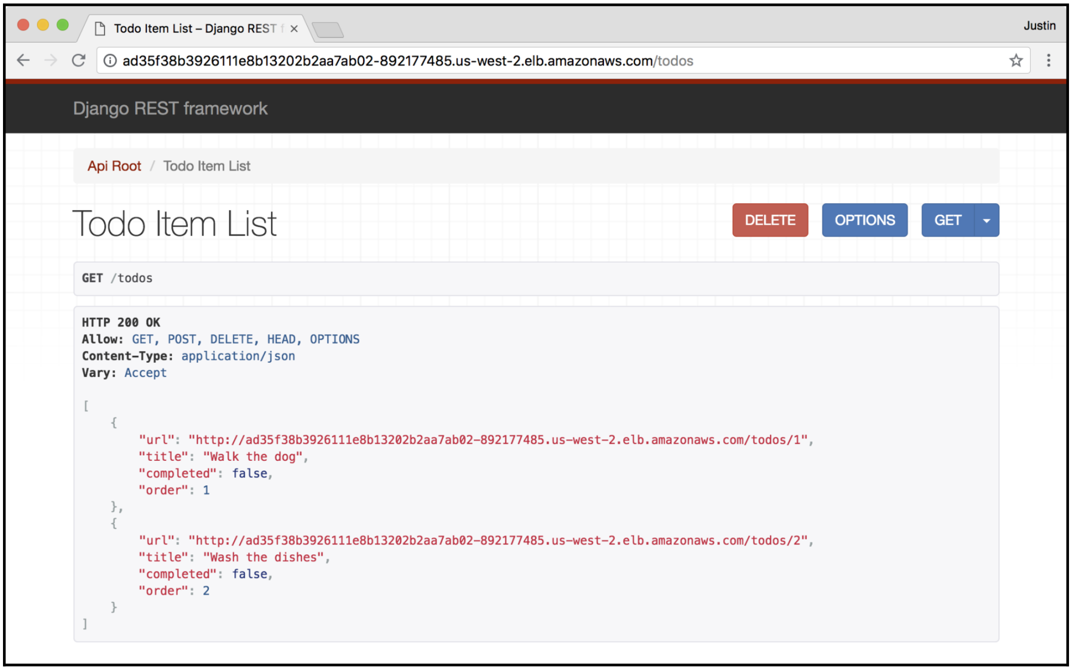
Cluster IP: 10.100.249.98

Internal endpoints: todobackend:80 TCP
todobackend:30316 TCP

External endpoints: ad35f38b3926111e8b13202b2aa7ab02-892177485.us-west-2.elb.amazonaws.com:80

Endpoints

Host	Ports (Name, Port, Protocol)	Node	Ready
172.31.33.38	<unset>, 8000, TCP	ip-172-31-38-41.us-west-2.compute.internal	true
172.31.4.45	<unset>, 8000, TCP	ip-172-31-15-111.us-west-2.compute.internal	true



Todo Item List – Django REST f
Justin
ad35f38b3926111e8b13202b2aa7ab02-892177485.us-west-2.elb.amazonaws.com/todos
Django REST framework
Api Root / Todo Item List
Todo Item List
DELETE
OPTIONS
GET

```
GET /todos
```

```
HTTP 200 OK
Allow: GET, POST, DELETE, HEAD, OPTIONS
Content-Type: application/json
Vary: Accept

[
    {
        "url": "http://ad35f38b3926111e8b13202b2aa7ab02-892177485.us-west-2.elb.amazonaws.com/todos/1",
        "title": "Walk the dog",
        "completed": false,
        "order": 1
    },
    {
        "url": "http://ad35f38b3926111e8b13202b2aa7ab02-892177485.us-west-2.elb.amazonaws.com/todos/2",
        "title": "Wash the dishes",
        "completed": false,
        "order": 2
    }
]
```