Lesson 10 Demo 03

Creating an ECS Cluster with Auto Scaling

Objective: To demonstrate how to create an ECS cluster with auto scaling and Container Insights, and how to run a task definition for an Nginx container on the cluster

Tools required: AWS Management Console

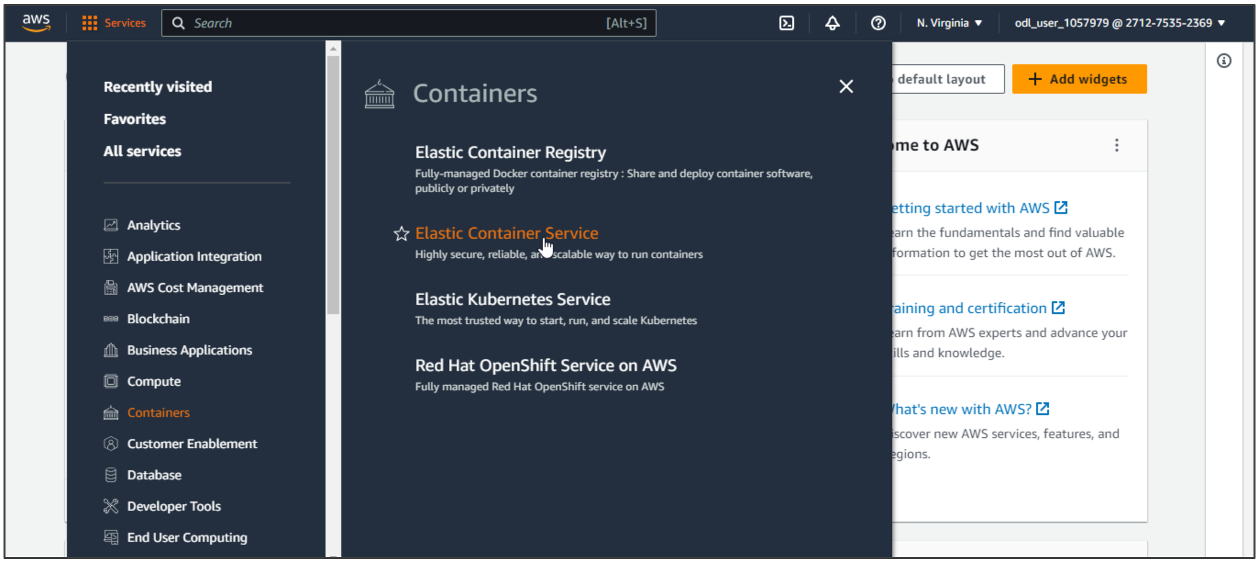
Prerequisites: A key pair for an EC2 instance must be created.

Steps to be followed:

1. Create an ECS cluster
2. Create a task definition
3. Run the task definition on the cluster

Step 1: Create an ECS cluster

1.1 In the AWS Console, select **Services** and then choose **ECS** under **Containers**


aws
Services
Search
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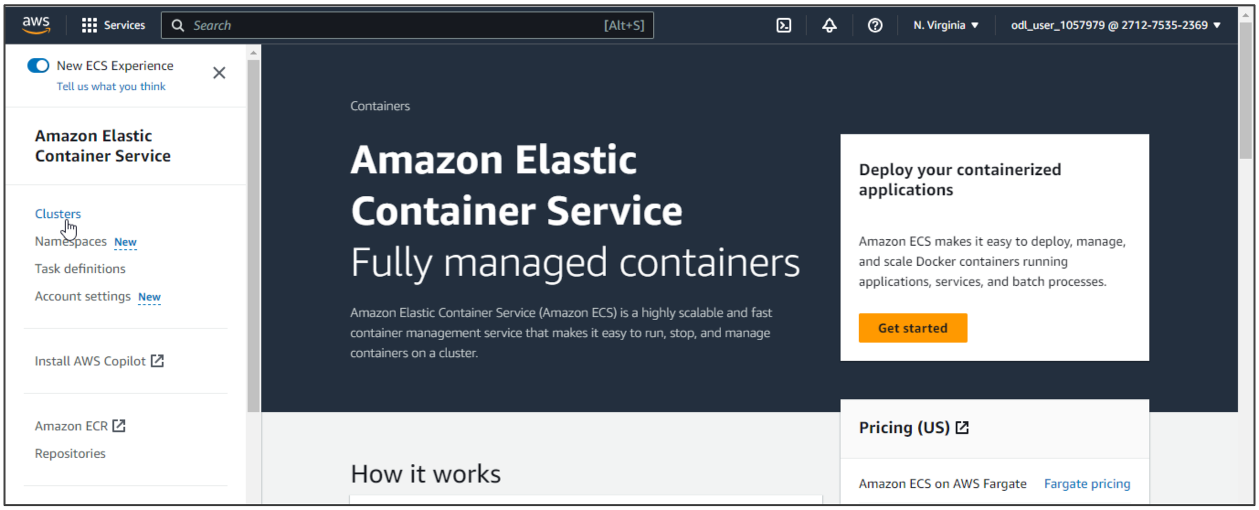
N. Virginia ▼
odl_user_1057979 @ 2712-7535-2369 ▼
Recently visited
Favorites
All services
Analytics
Application Integration
AWS Cost Management
Blockchain
Business Applications
Compute
Containers
Customer Enablement
Database
Developer Tools
End User Computing
Containers
Elastic Container Registry
Fully-managed Docker container registry : Share and deploy container software, publicly or privately
Elastic Container Service
Highly secure, reliable, and scalable way to run containers
Elastic Kubernetes Service
The most trusted way to start, run, and scale Kubernetes
Red Hat OpenShift Service on AWS
Fully managed Red Hat OpenShift service on AWS
default layout
+ Add widgets
me to AWS
etting started with AWS
arn the fundamentals and find valuable formation to get the most out of AWS.
aining and certification
arn from AWS experts and advance your ills and knowledge.
hat's new with AWS?
scover new AWS services, features, and egions.

1.2 In the navigation pane, choose **Clusters**



Amazon Elastic Container Service

Fully managed containers

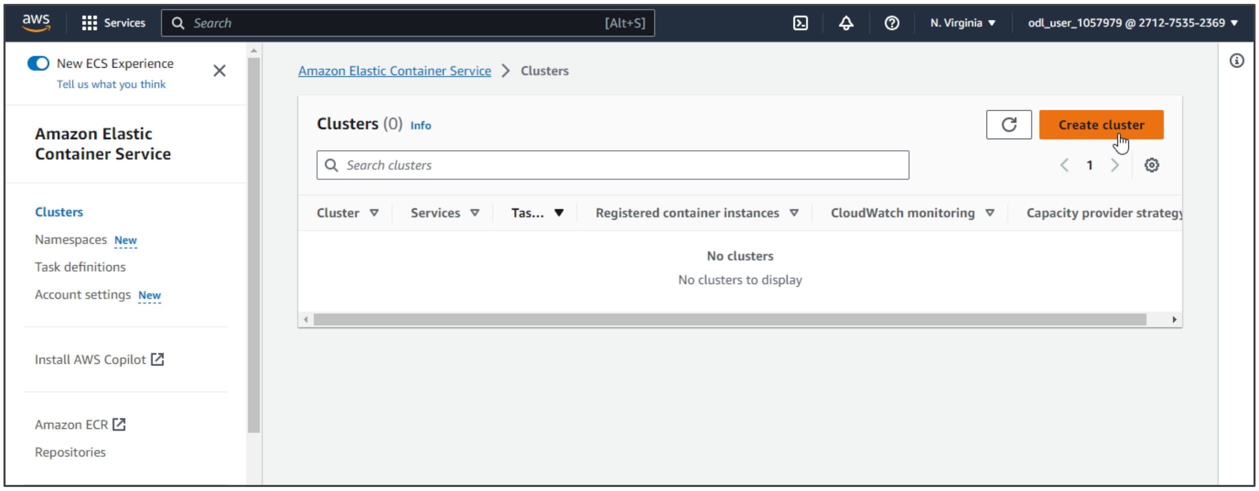
Amazon Elastic Container Service (Amazon ECS) is a highly scalable and fast container management service that makes it easy to run, stop, and manage containers on a cluster.

Deploy your containerized applications

Amazon ECS makes it easy to deploy, manage, and scale Docker containers running applications, services, and batch processes.

How it works

1.3 Choose **Create cluster**



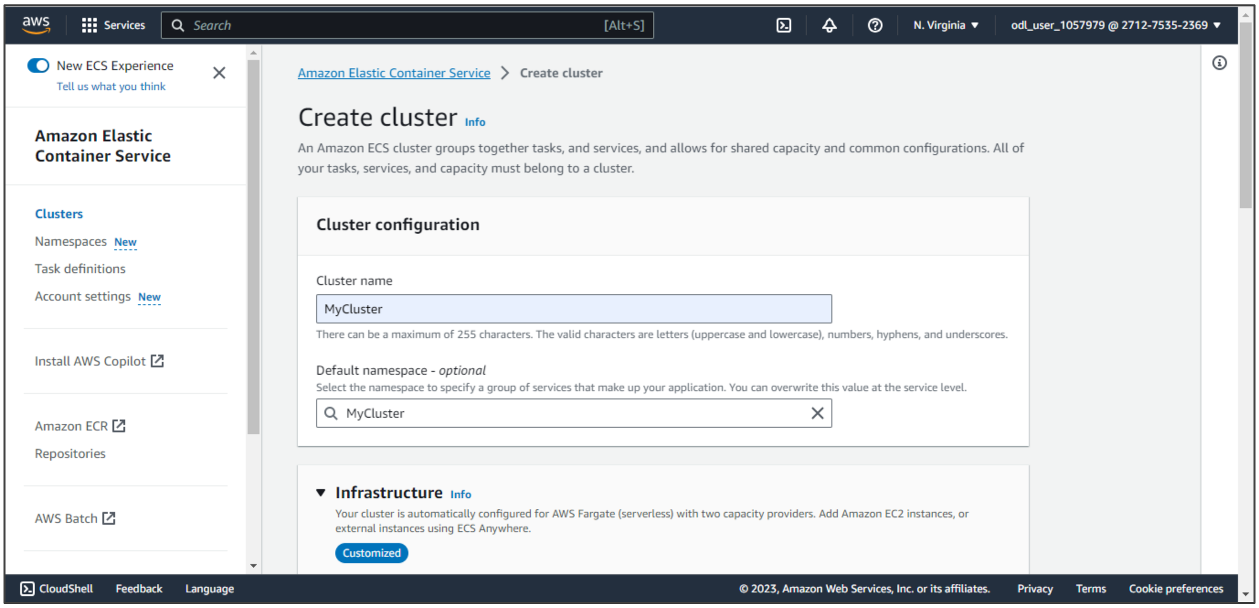
Clusters (0) Info

Cluster ▽	Services ▽	Tas... ▼	Registered container instances ▽	CloudWatch monitoring ▽	Capacity provider strategy

No clusters

No clusters to display

1.4 Create an ECS cluster with the settings shown in the screenshots:



Amazon Elastic Container Service > Create cluster

Create cluster Info

An Amazon ECS cluster groups together tasks, and services, and allows for shared capacity and common configurations. All of your tasks, services, and capacity must belong to a cluster.

Cluster configuration

Cluster name: MyCluster

There can be a maximum of 255 characters. The valid characters are letters (uppercase and lowercase), numbers, hyphens, and underscores.

Default namespace - *optional*

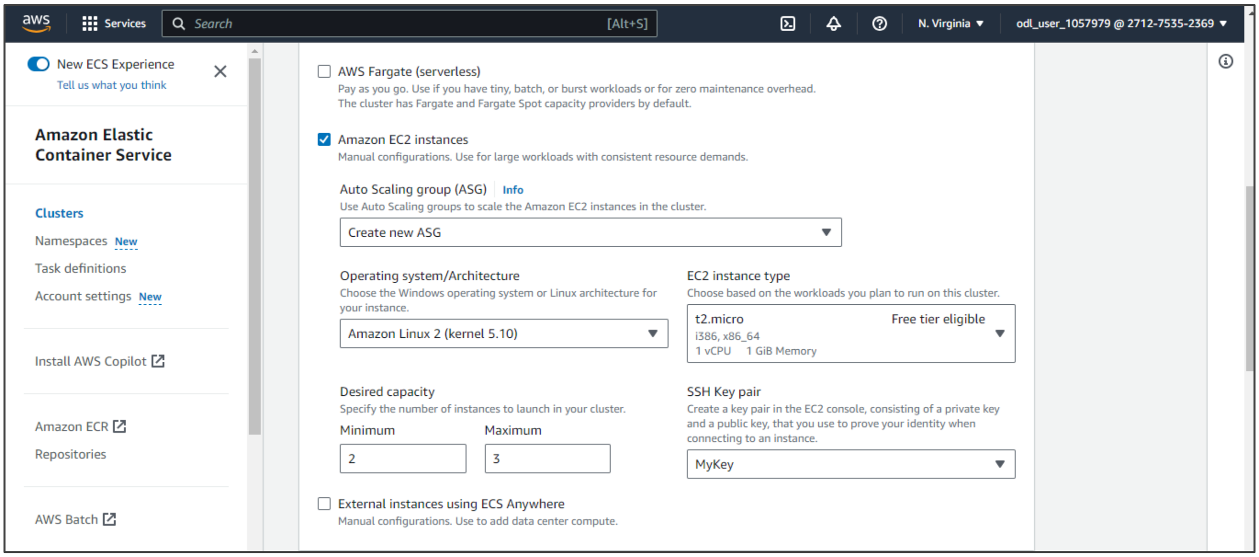
Select the namespace to specify a group of services that make up your application. You can overwrite this value at the service level.

MyCluster

▼ Infrastructure Info

Your cluster is automatically configured for AWS Fargate (serverless) with two capacity providers. Add Amazon EC2 instances, or external instances using ECS Anywhere.

Customized



□ AWS Fargate (serverless)

Pay as you go. Use if you have tiny, batch, or burst workloads or for zero maintenance overhead. The cluster has Fargate and Fargate Spot capacity providers by default.

☑ Amazon EC2 instances

Manual configurations. Use for large workloads with consistent resource demands.

Auto Scaling group (ASG) Info

Use Auto Scaling groups to scale the Amazon EC2 instances in the cluster.

Create new ASG

Operating system/Architecture

Choose the Windows operating system or Linux architecture for your instance.

Amazon Linux 2 (kernel 5.10)

EC2 instance type

Choose based on the workloads you plan to run on this cluster.

t2.micro Free tier eligible
i386, x86_64
1 vCPU 1 GiB Memory

Desired capacity

Specify the number of instances to launch in your cluster.

Minimum: 2

Maximum: 3

SSH Key pair

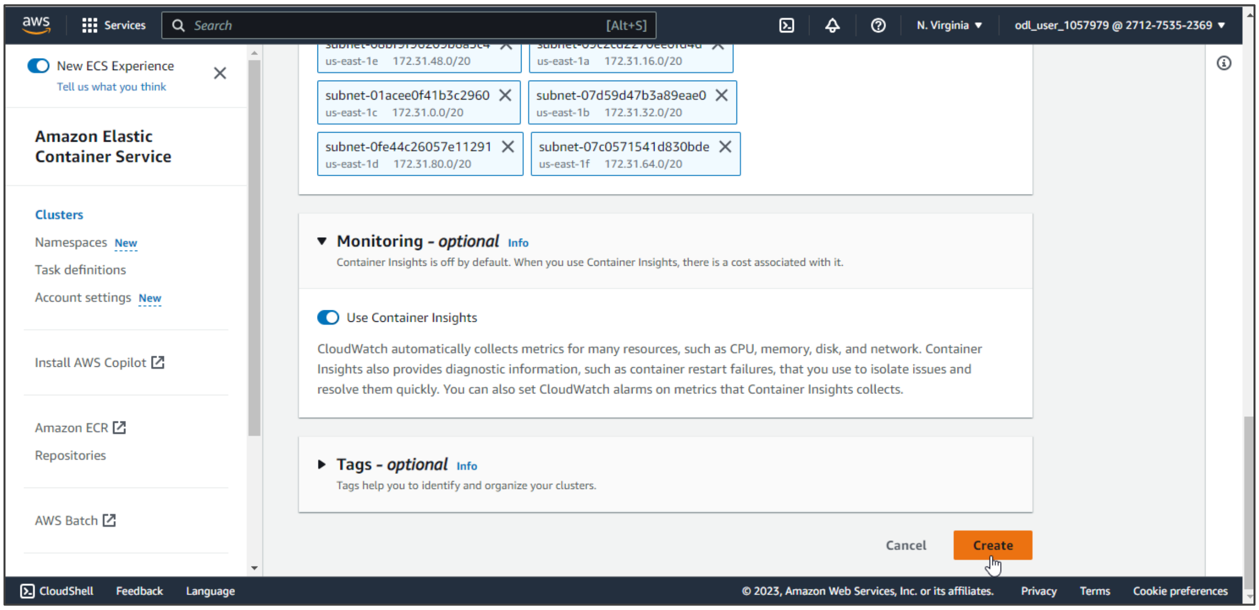
Create a key pair in the EC2 console, consisting of a private key and a public key, that you use to prove your identity when connecting to an instance.

MyKey

□ External instances using ECS Anywhere

Manual configurations. Use to add data center compute.

1.5 Click **Create**



us-east-1e 172.31.48.0/20	us-east-1a 172.31.16.0/20
subnet-01acee0f41b3c2960 us-east-1c 172.31.0.0/20	subnet-07d59d47b3a89eae0 us-east-1b 172.31.32.0/20
subnet-0fe44c26057e11291 us-east-1d 172.31.80.0/20	subnet-07c0571541d830bde us-east-1f 172.31.64.0/20

▼ **Monitoring - *optional*** Info

Container Insights is off by default. When you use Container Insights, there is a cost associated with it.

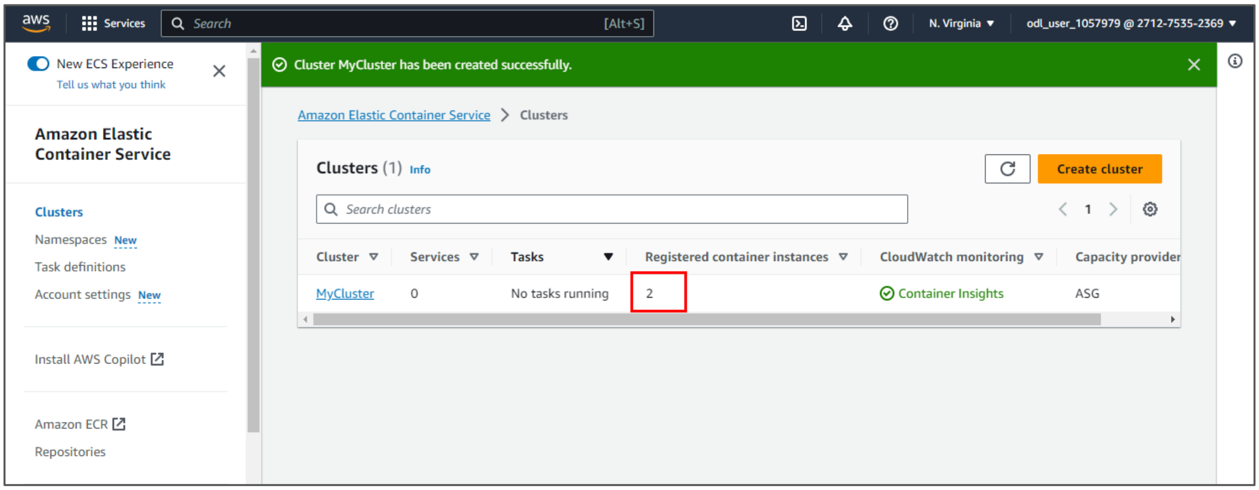
● Use Container Insights

CloudWatch automatically collects metrics for many resources, such as CPU, memory, disk, and network. Container Insights also provides diagnostic information, such as container restart failures, that you use to isolate issues and resolve them quickly. You can also set CloudWatch alarms on metrics that Container Insights collects.

▶ **Tags - *optional*** Info

Tags help you to identify and organize your clusters.

Note: Please wait for a few minutes until the EC2 instances are registered on the cluster.



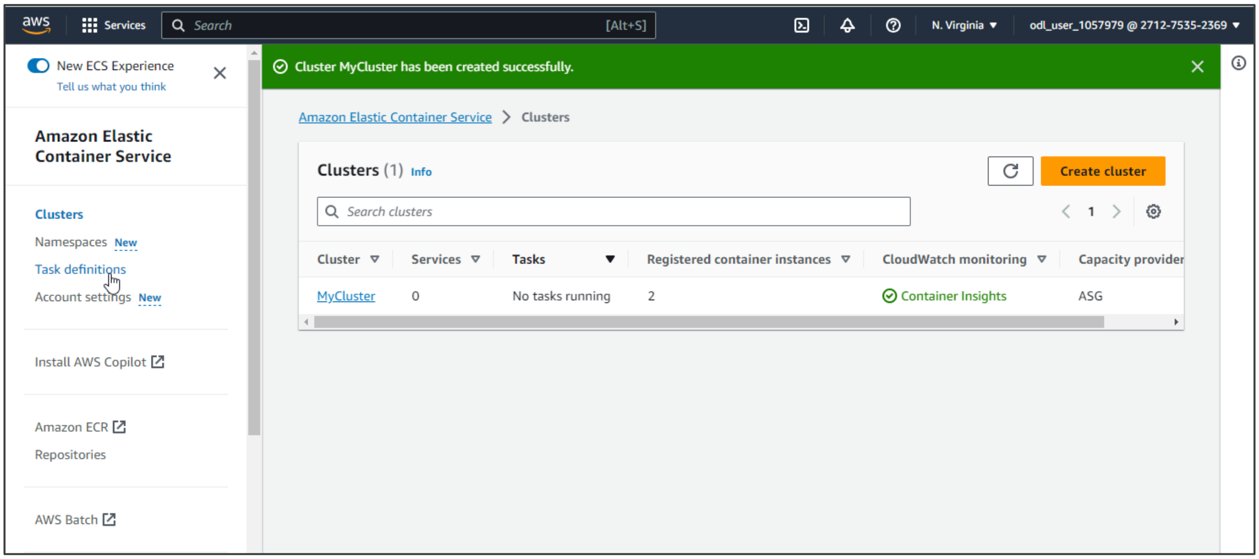
✓ Cluster MyCluster has been created successfully.

Clusters (1) Info

Cluster	Services	Tasks	Registered container instances	CloudWatch monitoring	Capacity provider
MyCluster	0	No tasks running	2	✓ Container Insights	ASG

Step 2: Create a task definition

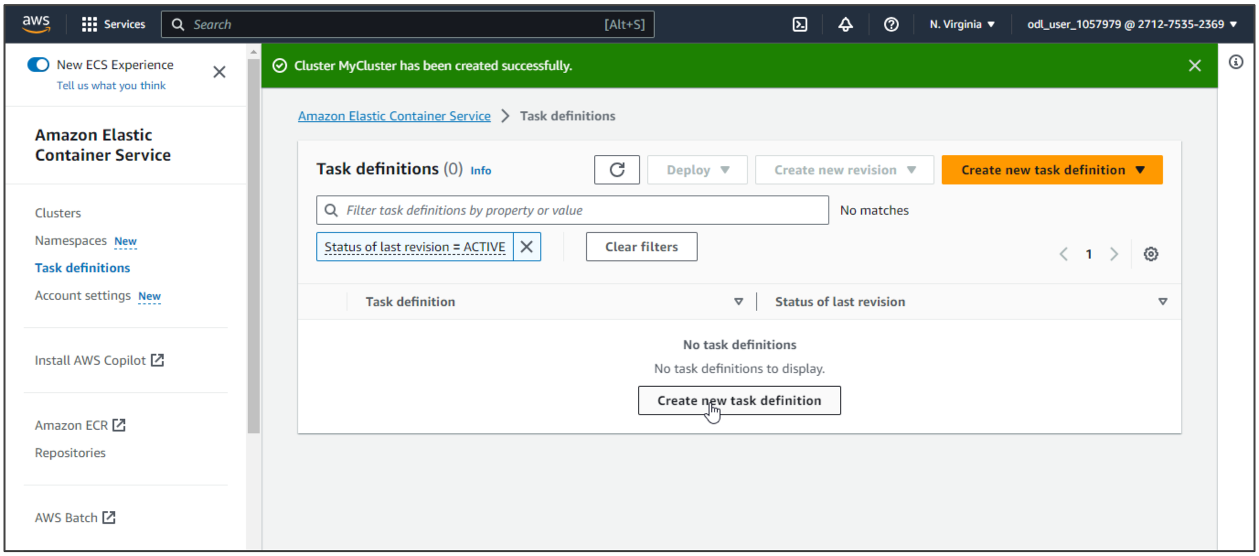
2.1 In the navigation pane, choose **Task definitions**



Cluster MyCluster has been created successfully.

Cluster	Services	Tasks	Registered container instances	CloudWatch monitoring	Capacity provider
MyCluster	0	No tasks running	2	Container Insights	ASG

2.2 Select **Create new task definition**


aws
Services
Search
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N. Virginia
odl_user_1057979 @ 2712-7535-2369
New ECS Experience
Tell us what you think
Amazon Elastic Container Service
Clusters
Namespaces New
Task definitions
Account settings New
Install AWS Copilot
Amazon ECR
Repositories
AWS Batch
Amazon Elastic Container Service > Task definitions
Task definitions (0) Info
Deploy
Create new revision
Create new task definition
Filter task definitions by property or value
Clear filters
1
Create new task definition

Cluster MyCluster has been created successfully.

No matches

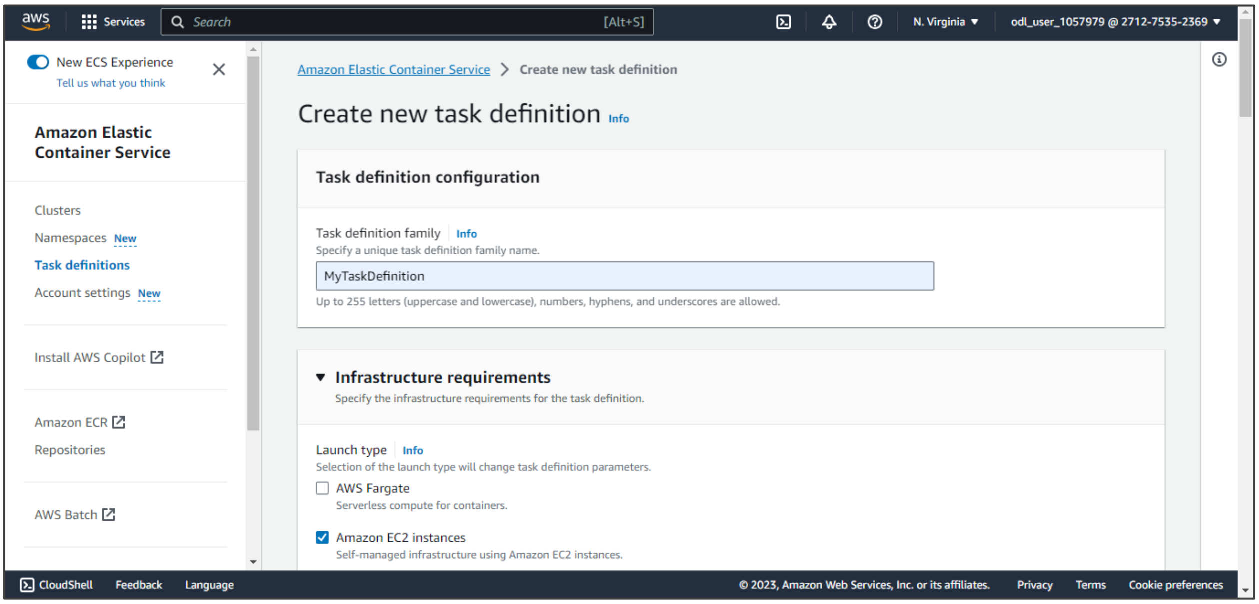
Status of last revision = ACTIVE

Task definition	Status of last revision

No task definitions

No task definitions to display.

2.3 Create the task definition with the settings shown in the screenshots:



Amazon Elastic Container Service > Create new task definition

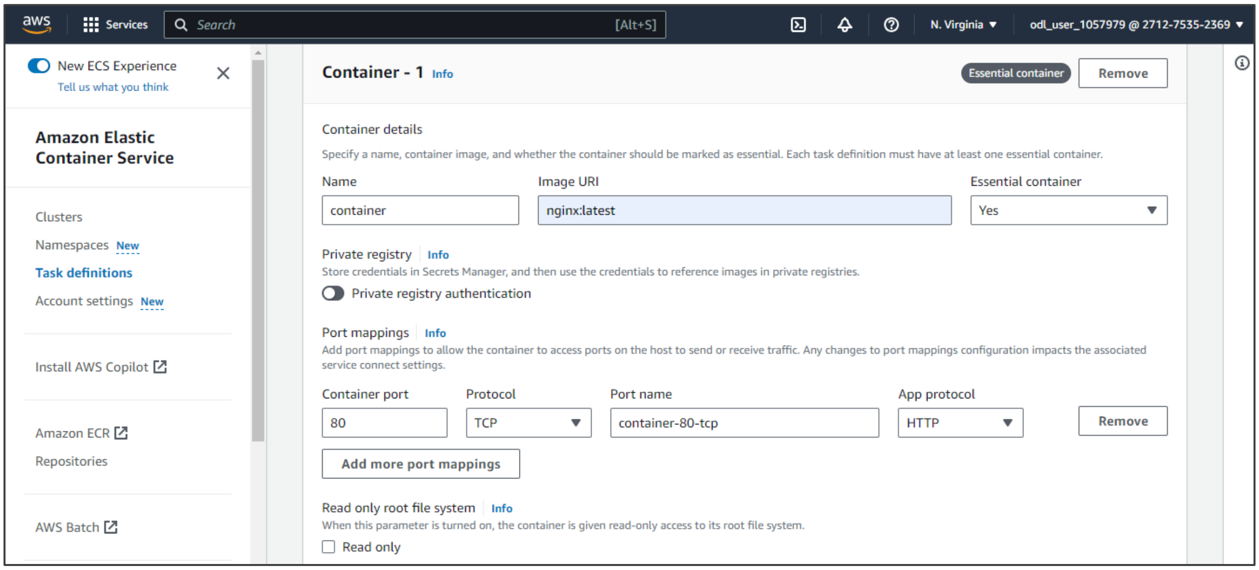
Create new task definition Info

Task definition configuration

Task definition family Info
Specify a unique task definition family name.
MyTaskDefinition
Up to 255 letters (uppercase and lowercase), numbers, hyphens, and underscores are allowed.

▼ Infrastructure requirements
Specify the infrastructure requirements for the task definition.

Launch type Info
Selection of the launch type will change task definition parameters.
□ AWS Fargate
Serverless compute for containers.
☑ Amazon EC2 instances
Self-managed infrastructure using Amazon EC2 instances.



Container - 1 Info

Container details
Specify a name, container image, and whether the container should be marked as essential. Each task definition must have at least one essential container.

Name	Image URI	Essential container
container	nginx:latest	Yes ▼

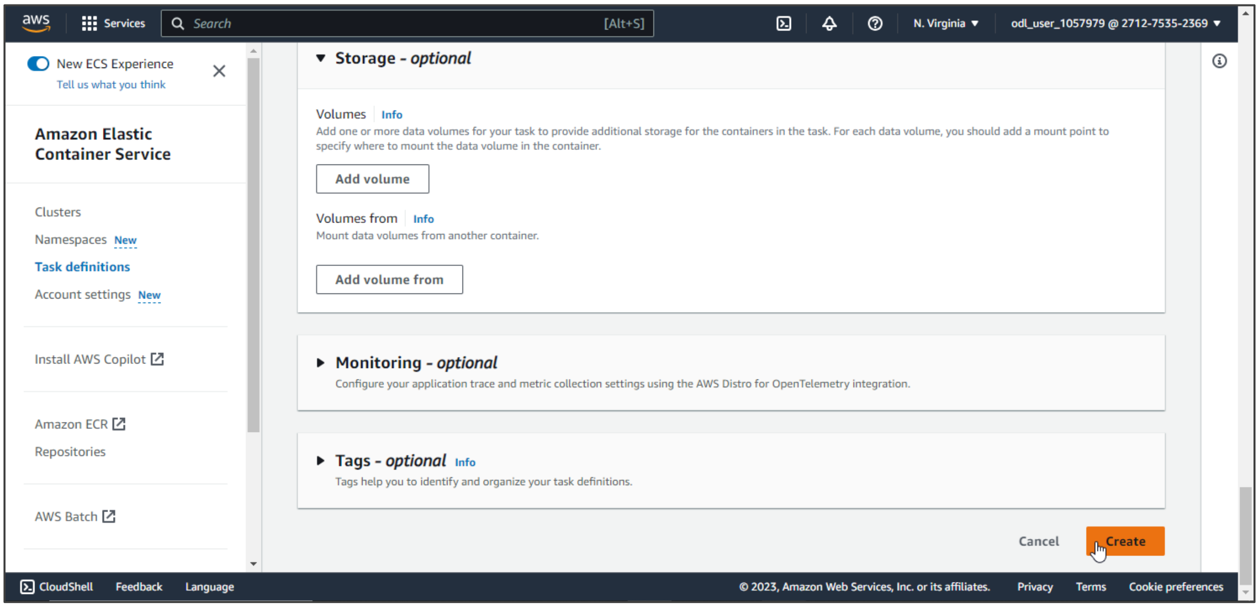
Private registry Info
Store credentials in Secrets Manager, and then use the credentials to reference images in private registries.
○ Private registry authentication

Port mappings Info
Add port mappings to allow the container to access ports on the host to send or receive traffic. Any changes to port mappings configuration impacts the associated service connect settings.

Container port	Protocol	Port name	App protocol
80	TCP ▼	container-80-tcp	HTTP ▼

Read only root file system Info
When this parameter is turned on, the container is given read-only access to its root file system.
□ Read only

2.4 Click **Create**

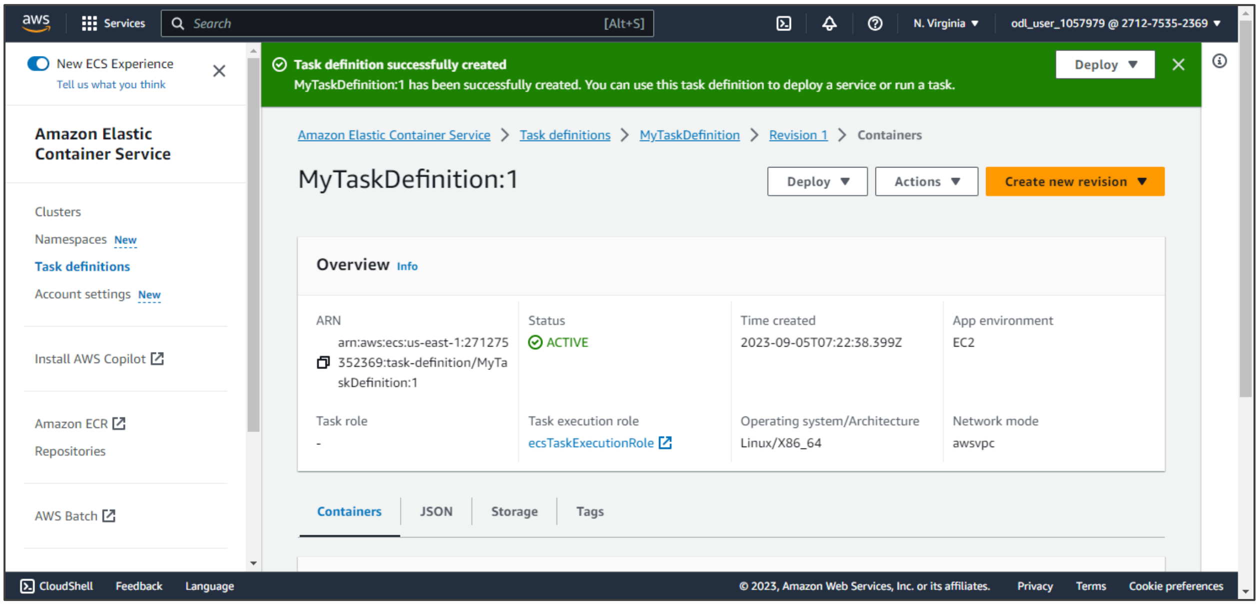


Add one or more data volumes for your task to provide additional storage for the containers in the task. For each data volume, you should add a mount point to specify where to mount the data volume in the container.

Mount data volumes from another container.

Configure your application trace and metric collection settings using the AWS Distro for OpenTelemetry integration.

Tags help you to identify and organize your task definitions.



Task definition successfully created

MyTaskDefinition:1 has been successfully created. You can use this task definition to deploy a service or run a task.

MyTaskDefinition:1

ARN: arn:aws:ecs:us-east-1:271275352369:task-definition/MyTaskDefinition:1

Status: ACTIVE

Time created: 2023-09-05T07:22:38.399Z

App environment: EC2

Task role: -

Task execution role: ecsTaskExecutionRole

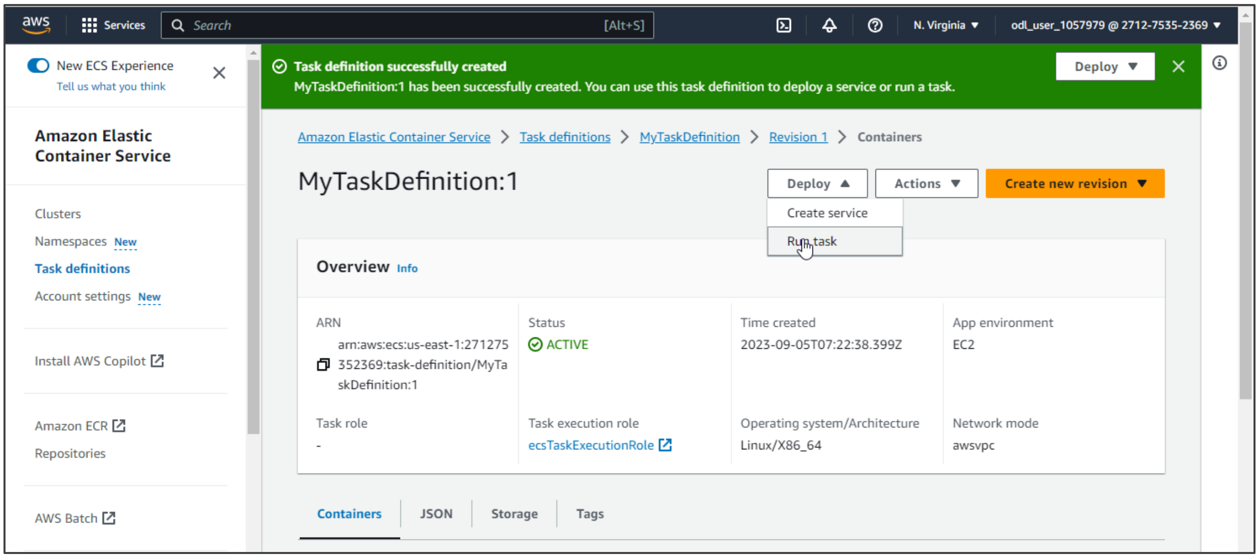
Operating system/Architecture: Linux/X86_64

Network mode: awsvpc

The task definition is created successfully.

Step 3: Run the task definition on the cluster

3.1 To run the task definition, select **Deploy** and click **Run task**



aws Services Search [Alt+S] N. Virginia odl_user_1057979 @ 2712-7535-2369

New ECS Experience
Tell us what you think

Amazon Elastic Container Service

Clusters
Namespaces New
Task definitions
Account settings New

Install AWS Copilot

Amazon ECR
Repositories

AWS Batch

Task definition successfully created
MyTaskDefinition:1 has been successfully created. You can use this task definition to deploy a service or run a task.

Deploy

Amazon Elastic Container Service > Task definitions > MyTaskDefinition > Revision 1 > Containers

MyTaskDefinition:1

Deploy ▲ | Actions ▼ | Create new revision ▼

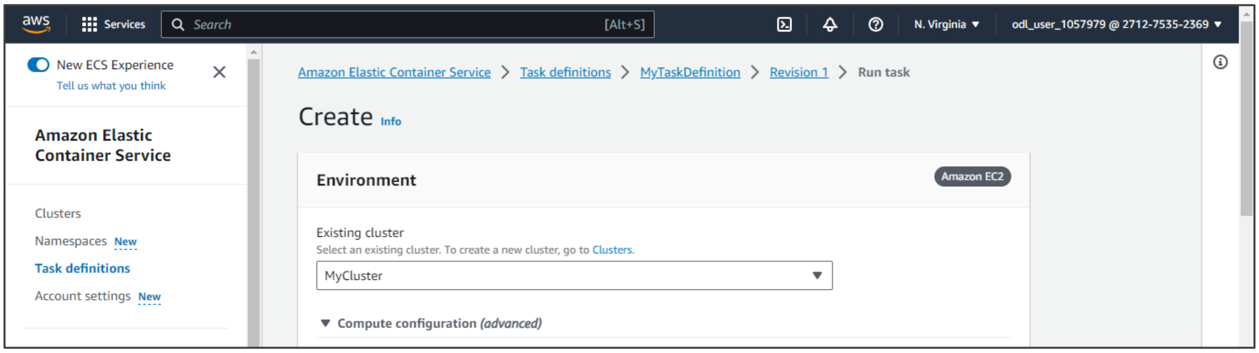
Create service
Run task

Overview Info

ARN	Status	Time created	App environment
arn:aws:ecs:us-east-1:271275352369:task-definition/MyTaskDefinition:1	ACTIVE	2023-09-05T07:22:38.399Z	EC2
Task role	**Task execution role**	**Operating system/Architecture**	**Network mode**
-	ecsTaskExecutionRole	Linux/X86_64	awsvpc

Containers | JSON | Storage | Tags

3.2 Choose the cluster that you created in the previous step



aws Services Search [Alt+S] N. Virginia odl_user_1057979 @ 2712-7535-2369

New ECS Experience
Tell us what you think

Amazon Elastic Container Service

Clusters
Namespaces New
Task definitions
Account settings New

Amazon Elastic Container Service > Task definitions > MyTaskDefinition > Revision 1 > Run task

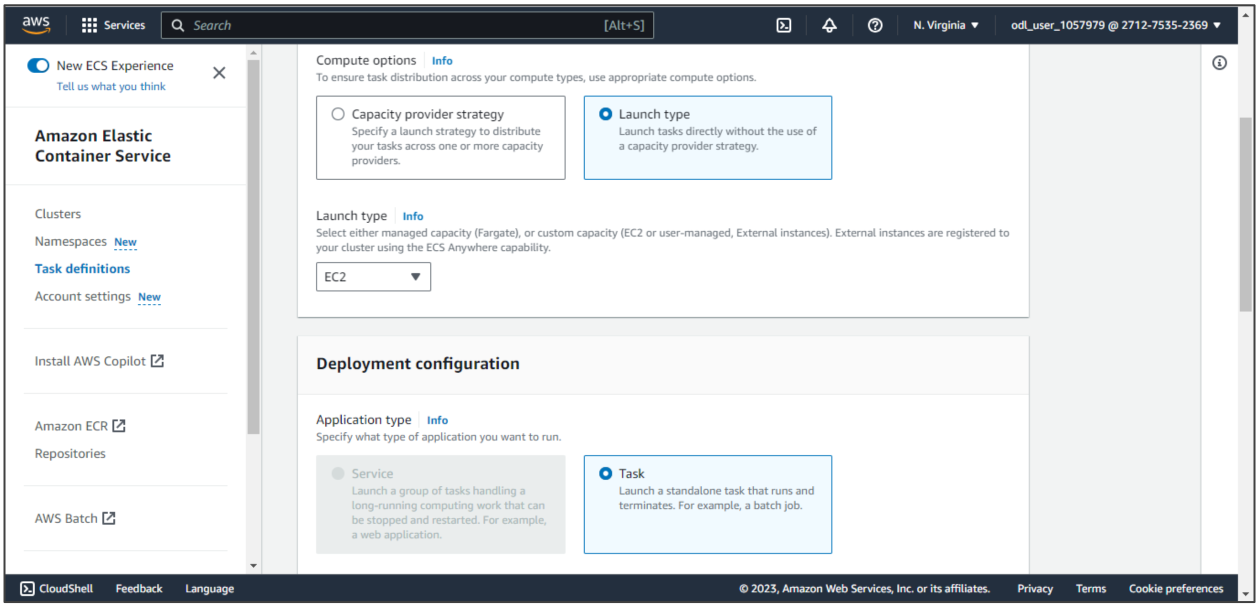
Create Info

Environment Amazon EC2

Existing cluster
Select an existing cluster. To create a new cluster, go to Clusters.
MyCluster ▼

▼ Compute configuration *(advanced)*

3.3 Configure the other settings as shown in the screenshots:



Compute options Info

To ensure task distribution across your compute types, use appropriate compute options.

○ Capacity provider strategy
Specify a launch strategy to distribute your tasks across one or more capacity providers.

● Launch type
Launch tasks directly without the use of a capacity provider strategy.

Launch type Info

Select either managed capacity (Fargate), or custom capacity (EC2 or user-managed, External instances). External instances are registered to your cluster using the ECS Anywhere capability.

EC2

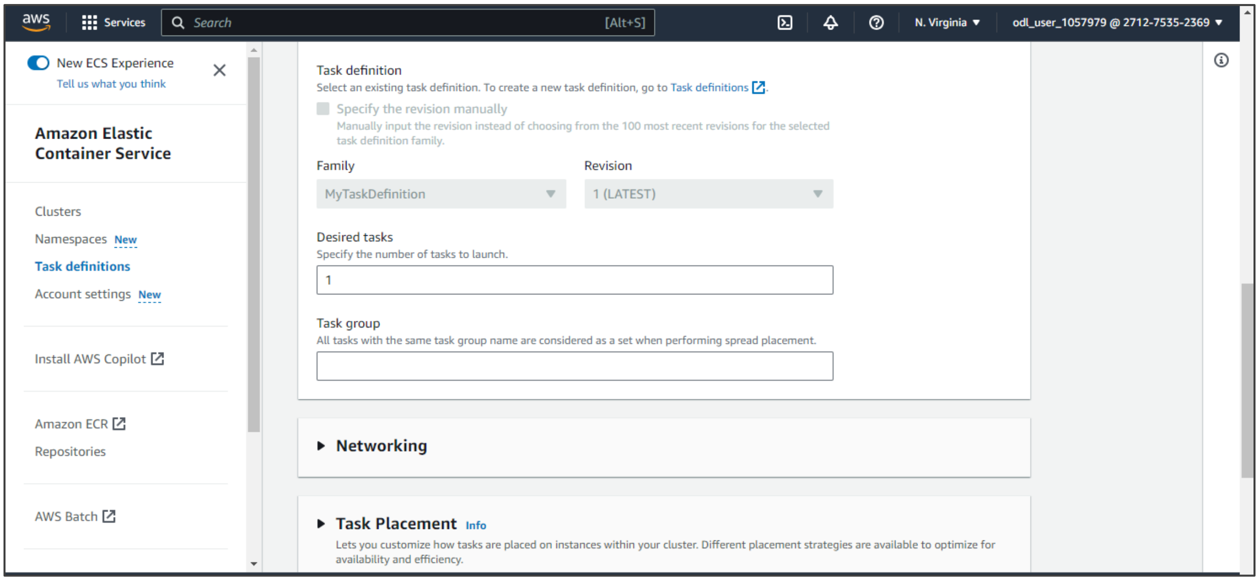
Deployment configuration

Application type Info

Specify what type of application you want to run.

○ Service
Launch a group of tasks handling a long-running computing work that can be stopped and restarted. For example, a web application.

● Task
Launch a standalone task that runs and terminates. For example, a batch job.



Task definition

Select an existing task definition. To create a new task definition, go to Task definitions.

□ Specify the revision manually
Manually input the revision instead of choosing from the 100 most recent revisions for the selected task definition family.

Family: MyTaskDefinition

Revision: 1 (LATEST)

Desired tasks

Specify the number of tasks to launch.

1

Task group

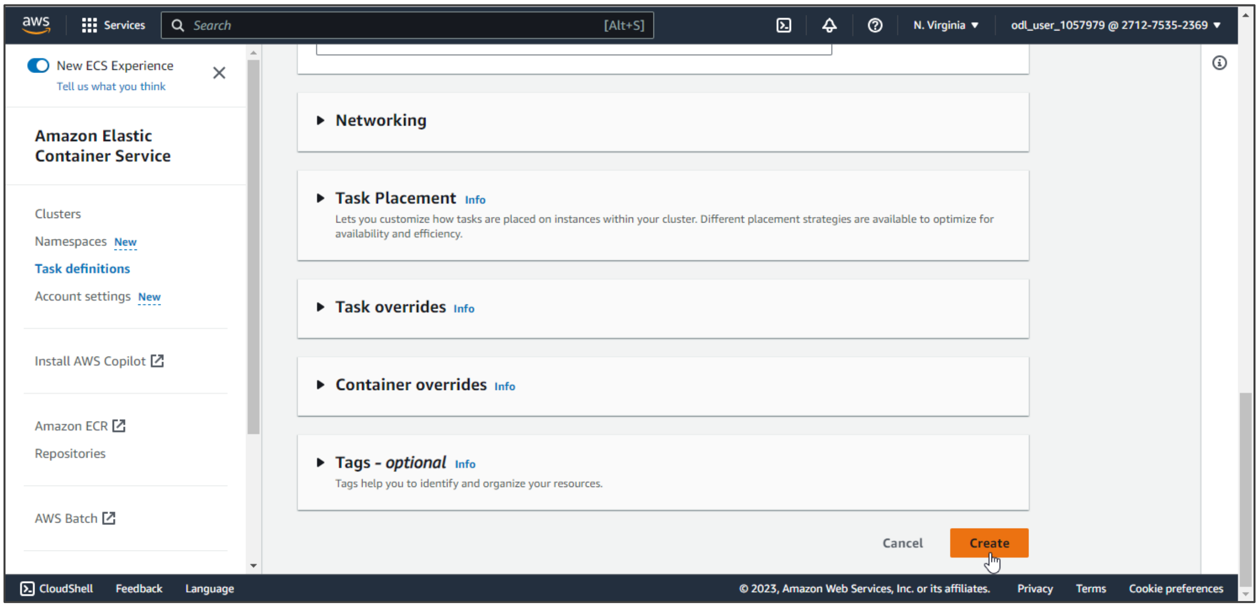
All tasks with the same task group name are considered as a set when performing spread placement.

▸ Networking

▸ Task Placement Info

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

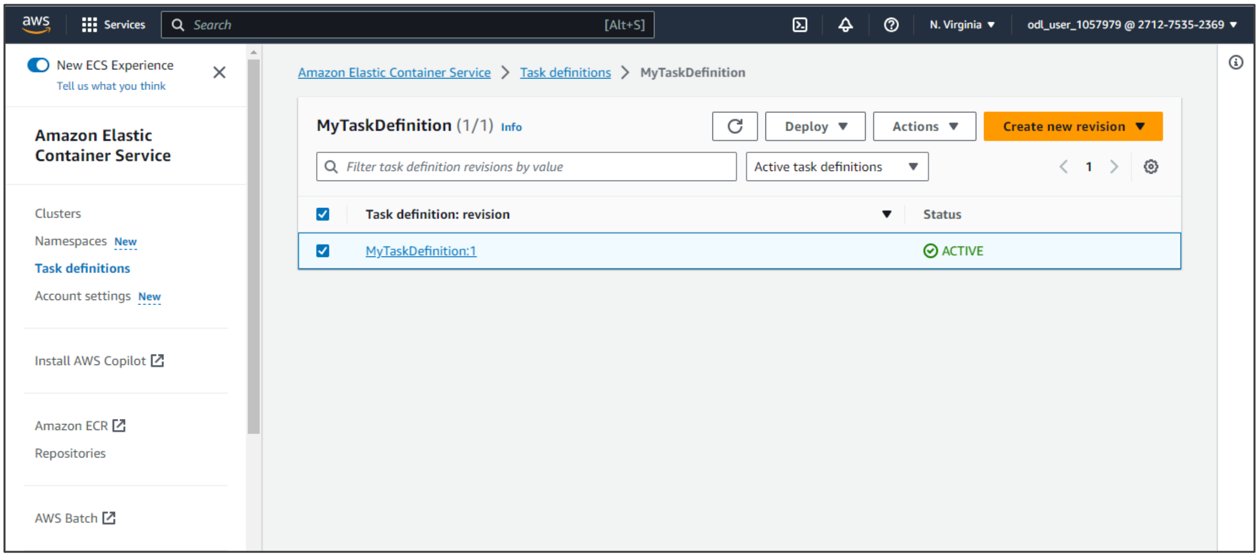
3.4 Choose **Create**



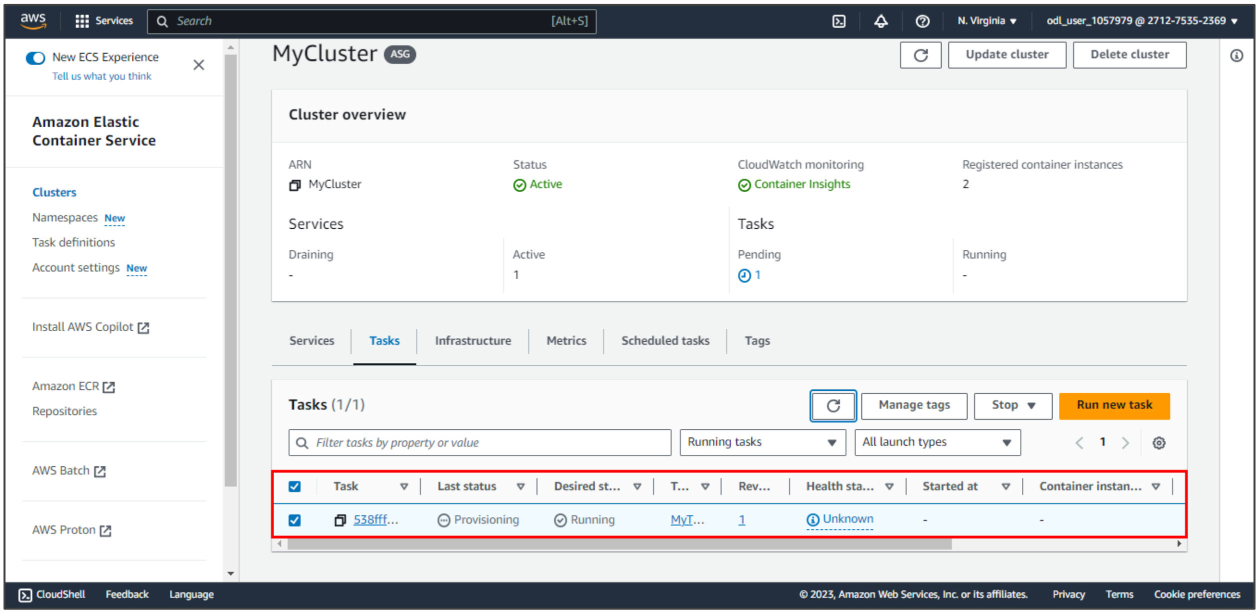
Lets you customize how tasks are placed on instances within your cluster. Different placement strategies are available to optimize for availability and efficiency.

Tags help you to identify and organize your resources.

The task definition is successfully executed.



☑	Task definition: revision	Status
☑	MyTaskDefinition:1	ACTIVE



MyCluster ASG

Cluster overview

ARN	Status	CloudWatch monitoring	Registered container instances
MyCluster	Active	Container Insights	2

Services

Draining	Active
-	1

Tasks

Pending	Running
1	-

Tasks (1/1)

Task	Last status	Desired st...	T...	Rev...	Health sta...	Started at	Container instan...
538fff...	Provisioning	Running	MyT...	1	Unknown	-	-

As you can see in the screenshot above, a task has been added to **MyCluster** and triggered successfully.

By following these steps, you have successfully created an ECS cluster with auto scaling and enabled Container Insights. You have also created a task definition for a Nginx container and run it on the cluster.