

Assignment 7 – Lambda

Tomorrow's topic is DynamoDB. It would be great if you brush up your knowledge on NoSQL.

<https://www.youtube.com/watch?v=ruz-vK8lesE>

1. Practice versioning and aliasing in lambda. Different versions will print out different logs. In the alias, do **50:50 routing** (canary) to the lambda versions.
2. Synchronous trigger – Run ‘hello world’ lambda behind **ALB** in your AWS Academy account. You need to run your lambda in VPC. Do it in your default VPC. What do you think if you don’t choose the VPC and subnets when creating the lambda in this case? It will immediately download the object when you hit the ALB URL. So include this in the response. *headers*:
`{"content-type": "text/html"}`
3. Asynchronous trigger – The **SQS** will trigger the lambda. Add a **filter** in the trigger. Then the Lambda will send the event object via email to you. Study about event filters in lambda and play with it. <https://www.youtube.com/watch?v=iAI6ScF119Q> and <https://docs.aws.amazon.com/lambda/latest/dg/invocation-eventfiltering.html>
4. Event Source Mapping – Implement event source mapping that lets lambda read data from Kinesis data stream and logs that event out in CloudWatch. You can do your own research on **Kinesis** which is a trending and powerful technology.

```
aws lambda create-event-source-mapping --function-name MyKinesisFunction --event-source  
arn:aws:kinesis:us-east-1:525718235721:stream/MyFirstDataStream --batch-size 100 --starting-position  
LATEST
```

```
aws kinesis put-record --stream-name MyFirstDataStream --partition-key 1 --data "hello first record"
```

Read: <https://docs.aws.amazon.com/lambda/latest/dg/invocation-eventsourcemapping.html>

Versions and Alias

The screenshot shows the AWS Lambda search results page. The search bar at the top contains the query 'Lambda'. Below the search bar, there is a sidebar with various links such as 'Services (6)', 'Features (2)', 'Resources New', 'Blogs (891)', 'Documentation (63,716)', 'Knowledge Articles (30)', 'Tutorials (4)', 'Events (4)', and 'Marketplace (310)'. The main content area displays a list of services under the heading 'Services' with a link to 'See all 6 results'. The first result is 'Lambda' with the description 'Run Code without Thinking about Servers'. Other results include 'CodeBuild', 'AWS Signer', and 'AWS Compute Optimizer'. Below this, there is a section titled 'Features' with a link to 'Local processing'.

The screenshot shows the AWS Lambda Functions management page. The left sidebar is expanded, showing 'AWS Lambda' with 'Functions' selected, and other sections like 'Dashboard', 'Applications', 'Additional resources', and 'Related AWS resources'. The main content area shows a table titled 'Functions (5)' with columns for 'Function name', 'Description', 'Package type', 'Runtime', and 'Last modified'. The table lists five functions: 'MainMonitoringFunction' (Python 3.8), 'Lab7Lambda' (Node.js 16.x), 'testing1' (Node.js 16.x), 'AsyncFunc' (Node.js 16.x), and 'myLambdaFunc' (Node.js 16.x). A red box highlights the 'Create function' button in the top right corner of the table header.

Function name	Description	Package type	Runtime	Last modified
MainMonitoringFunction	-	Zip	Python 3.8	3 days ago
Lab7Lambda	-	Zip	Node.js 16.x	3 hours ago
testing1	-	Zip	Node.js 16.x	2 hours ago
AsyncFunc	-	Zip	Node.js 16.x	2 hours ago
myLambdaFunc	-	Zip	Node.js 16.x	10 hours ago

Servicess Search [Alt+S] N. Virginia v vocabs/user2245686=supriya @ 8468-6651-5154

Lambda > Functions > Create function

Create function Info

AWS Serverless Application Repository applications have moved to [Create application](#).

Author from scratch Start with a simple Hello World example.

Use a blueprint Build a Lambda application from sample code and configuration presets for common use cases.

Container image Select a container image to deploy for your function.

Basic information

Function name Enter a name that describes the purpose of your function.
 Use only letters, numbers, hyphens, or underscores with no spaces.

Runtime Info Choose the language to use to write your function. Note that the console code editor supports only Node.js, Python, and Ruby.

Architecture Info Choose the instruction set architecture you want for your function code.
 x86_64
 arm64

Permissions Info By default, Lambda will create an execution role with permissions to upload logs to Amazon CloudWatch Logs. You can customize this default role later when adding triggers.

▼ Change default execution role

Execution role Choose a role that defines the permissions of your function. To create a custom role, go to the [IAM console](#).

Create a new role with basic Lambda permissions
 Use an existing role
 Create a new role from AWS policy templates

Existing role Choose an existing role that you've created to be used with this Lambda function. The role must have permission to upload logs to Amazon CloudWatch Logs.
 [View the LabRole role on the IAM console](#).

► Advanced settings

[Cancel](#) [Create function](#)

The screenshot shows the AWS Lambda console interface. At the top, a green banner indicates: "Successfully created the function MyLambdaFunc. You can now change its code and configuration. To invoke your function with a test event, choose 'Test'." Below this, the function name "MyLambdaFunc" is displayed. On the right, there is a "Actions" menu with several options: Throttle, Copy ARN, Actions (with a dropdown), Publish new version (highlighted with a red arrow), Create alias, Export function, Capabilities, Deploy to Lambda@Edge, and Delete function. The "Function overview" section shows basic details: Description (-), Last modified (33 seconds ago), Function ARN (arn:aws:lambda:us-east-1:846866515154:function:MyLambdaFunc), and Function URL (info). Below this, tabs for Code, Test, Monitor, Configuration, Aliases, and Versions are present, with "Versions" being the active tab. The "Versions" section shows a table with columns: Version, Aliases, Description, Last modified, and Architecture. A message states: "No versions. This function does not have any published versions." A "Publish new version" button is located at the bottom of this section.

This screenshot shows a modal dialog titled "Publish new version from \$LATEST". The text inside the dialog explains: "Publishing a new version saves a snapshot of the code and the configuration of the \$LATEST version. You need to deploy code changes in \$LATEST before you can create a new version. Any triggers you added to the function are not saved to the new version. You can't change the new version's code. Choose Publish to confirm." Below this, there is a "Version description - optional" input field and a "Cancel" button. At the bottom right is a large, prominent "Publish" button, which is highlighted with a red border.

```
5     body: JSON.stringify('Hello from Lambda!'),
6   };
7   return response;
8 }
```

MyLambdaFunc

Description
-

Last modified
3 minutes ago

Function ARN
arn:aws:lambda:us-east-1:846866515154:function:MyLambdaFunc

Function URL: [Info](#)

Versions (2) [Info](#)

Version	Aliases	Description	Last modified	Architecture
2	-	v1.0	3 minutes ago	x86_64
1	-	-	6 minutes ago	x86_64

change something in code, then you can publish next version

MyLambdaFunc

Throttle [Copy ARN](#) Actions ▾

- Publish new version
- Create alias**
- Export function
- Capabilities
- Deploy to Lambda@Edge
- Delete function

Description
-

Last modified
4 hours ago

aws Services Search [Alt+S] ✖ 4

Lambda > Functions > MyLambdaFunc > Create alias

Create alias

Alias configuration

An alias is a pointer to one or two versions. Choose each version that you want the alias to point to.

Name: prod

Description - optional:

Version: 2 Weight (%): 50

▼ Weighted alias

You can shift traffic between two versions, based on weights (%) that you assign. Click [here](#) to learn more.

Additional version - optional: 1 Weight (%): 50

Cancel Save

Code	Test	Monitor	Configuration	Aliases	Versions
Aliases (1) <small>Info</small>					
<input type="text" value="Find aliases"/> < 1 >					
Name	▲ Versions	Description			
prod	version: 2 (weight=50%) version: 1 (weight=50%)	-			

ALB and Lambda

Run 'hello world' lambda behind **ALB** in your AWS Academy account. You need to run your lambda in VPC. Do it in your default VPC.

The screenshot shows the AWS EC2 Security Groups page. On the left, the navigation menu is visible with 'Security Groups' selected. The main table lists two existing security groups: 'default' and 'MyFirstAlbSg'. A red box highlights the 'Create security group' button at the top right of the table.

Create Security Group

A security group acts as a virtual firewall for your instance to control inbound and outbound traffic. To create a new security group, complete the fields below.

Basic details

Security group name: MySg (highlighted by a red arrow)

Description: MySg (highlighted by a red arrow)

VPC: vpc-04d9c711cefab0f0b

Inbound rules

Type: Custom TCP (highlighted by a red box)

Protocol: TCP

Port range: 80

Source: Anywhere (highlighted by a red box)

Description - optional: (empty)

Outbound rules

Type: All traffic

Protocol: All

Port range: All

Destination: Custom (highlighted by a red box)

Description - optional: (empty)

Tags - optional

No tags associated with the resource.

Add new tag (button)

You can add up to 50 more tags

Cancel (button)

Create security group (highlighted by a red box)

The screenshot shows the AWS EC2 Target Groups page. On the left, there's a navigation sidebar with categories like Elastic Block Store, Network & Security, Load Balancing, and Auto Scaling. Under Load Balancing, 'Target Groups' is selected and highlighted with a red box. The main content area shows a table titled 'Target groups (1) Info'. A red box highlights the 'Create target group' button at the top right of the table header. The table has columns for Name, ARN, Port, Protocol, Target type, and Load balancer. One row is listed: Name is 'LambdaTg', ARN is 'arn:aws:elasticloadbalancing...', Target type is 'Lambda', and Load balancer is 'myALB'. Below the table, it says '0 target groups selected'.

Create Target group with Lambda

This is a step-by-step wizard for creating a target group. The current step is 'Step 1 Specify group details'. It includes a breadcrumb trail: EC2 > Target groups > Create target group. The main section is titled 'Specify group details' and contains the following:

- Basic configuration:** Settings in this section cannot be changed after the target group is created.
- Choose a target type:** A red arrow points to the 'Lambda function' option, which is selected (indicated by a blue outline). Other options shown are 'Instances' and 'IP addresses'.
- Target group name:** The input field contains 'MyLambdaTg'. A note below says: 'A maximum of 32 alphanumeric characters including hyphens are allowed, but the name must not begin or end with a hyphen.'
- Enable Health Status** (highlighted with a red arrow):
 - Health checks:** A note below says: 'The associated load balancer periodically sends requests, per the settings below, to the registered targets to test their status.'

Health checks

The associated load balancer periodically sends requests, per the settings below, to the registered targets to test their status.

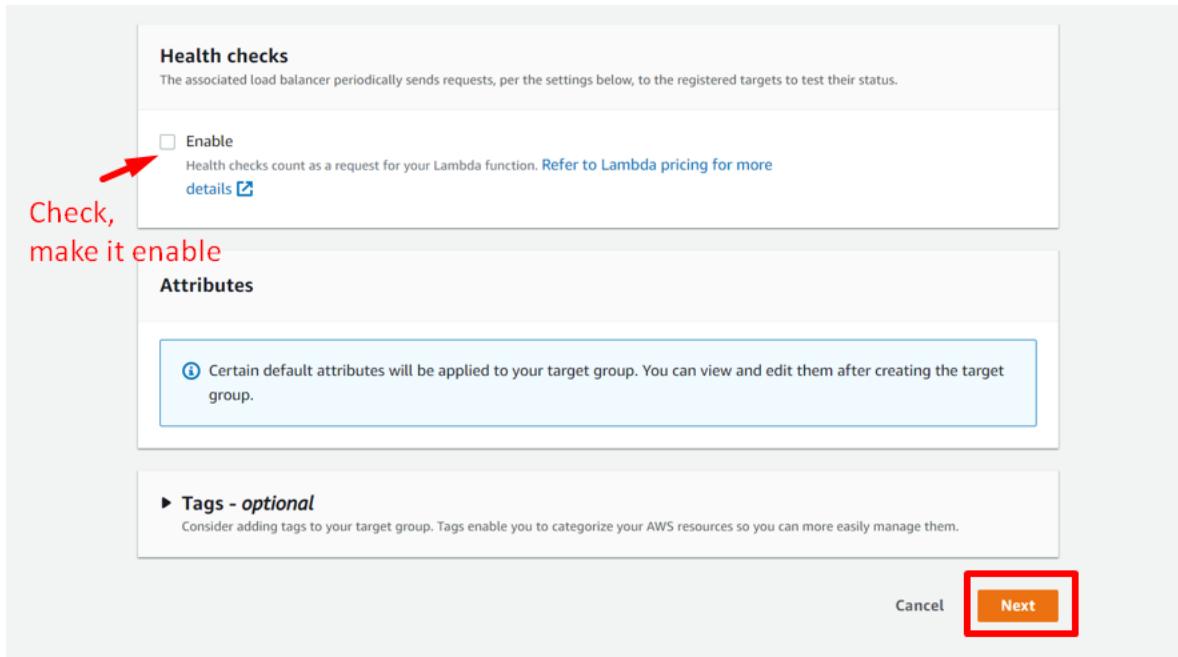
Enable
 Health checks count as a request for your Lambda function. Refer to [Lambda pricing for more details](#)

Check, make it enable

Attributes

Tags - optional
 Consider adding tags to your target group. Tags enable you to categorize your AWS resources so you can more easily manage them.

Cancel **Next**



EC2 > Target groups > Create target group

Step 1
Specify group details

Step 2
Register targets

Register targets

This is an optional step to create a target group. However, to ensure that your load balancer routes traffic to this target group you must register your targets.

Lambda function

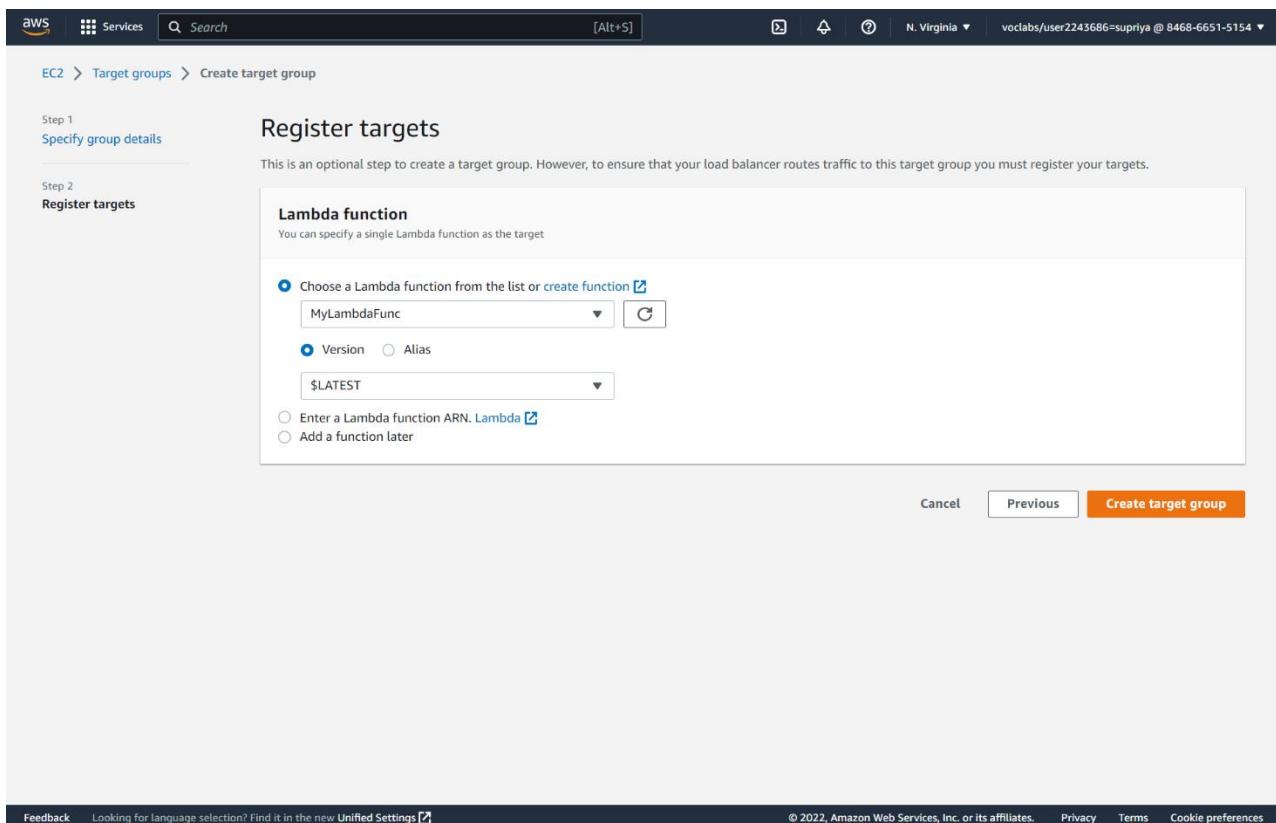
You can specify a single Lambda function as the target

Choose a Lambda function from the list or [create function](#)

Version Alias

Enter a Lambda function ARN. [Lambda](#) Add a function later

Cancel **Previous** **Create target group**



The screenshot shows the AWS EC2 Target groups page. At the top, there's a navigation bar with the AWS logo, Services, a search bar, and account information: N. Virginia and vclabs/user2243686=supriya @ 8468-6651-5154. Below the navigation is a breadcrumb trail: EC2 > Target groups > MyLambdaTg. The main title is "MyLambdaTg". On the right, there's an "Actions" dropdown menu. The "Details" section shows the ARN: arn:aws:elasticloadbalancing:us-east-1:846866515154:targetgroup/MyLambdaTg/1a9ddb2f7d275c94. The "Target type" is "Lambda" and "Load balancer" is "None associated". Below this are tabs for Targets, Monitoring, Health checks (which is selected), Attributes, and Tags. The "Registered target" section contains a "Deregister" button. It lists a Lambda function "MyLambdaFunc" with version "\$LATEST" and ARN arn:aws:lambda:us-east-1:846866515154:function:MyLambdaFunc. The "Health status" is "unused" (highlighted with a red box). A note next to it says "This must be healthy, otherwise enable from Health checks". Under "Health status details", it says "Target group is not configured to receive traffic from the load balancer".

The screenshot shows the "Edit health check settings" page for the MyLambdaTg target group. The top navigation is identical to the previous screenshot. The main title is "Edit health check settings". The "Health checks" section is open, showing a checked checkbox for "Enable". A note below it says "The associated load balancer periodically sends requests, per the settings below, to the registered targets to test their status." Below this, there's a "Health check path" input field containing "/" (highlighted with a red box) and a note "Up to 1024 characters allowed.". At the bottom, there's a "Advanced health check settings" link, a "Cancel" button, and an orange "Save changes" button.

Targets Monitoring Health checks Attributes Tags

Registered target

Lambda target groups are limited to a single Lambda function target. The load balancer starts routing requests to a newly registered target passes the initial health checks (if enabled).

Deregister

Lambda function MyLambdaFunc	Health status healthy
Version \$LATEST	Health status details
ARN arn:aws:lambda:us-east-1:846866515154:function:MyLambdaFunc	

us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#LoadBalancers:sort=loadBalancerName

Create Load Balancer

Name	DNS name	State	VPC ID	Availability Zones	Type
myALB	myALB-371424504.us-east-...	Active	vpc-04d9c711cefab0f0b	us-east-1a, us-east-1b	application

Load balancer: myALB

Description Listeners Monitoring Integrated services Tags

Basic Configuration

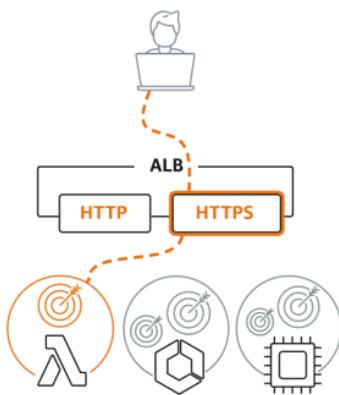
Name	myALB
ARN	arn:aws:elasticloadbalancing:us-east-1:846866515154:loadbalancer/app/myALB/341fbfc7249f1a6
DNS name	myALB-371424504.us-east-1.elb.amazonaws.com
State	Active
Type	application

Select load balancer type

A complete feature-by-feature comparison along with detailed highlights is also available. [Learn more](#)

Load balancer types

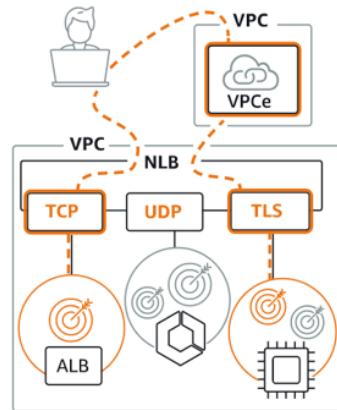
Application Load Balancer [Info](#)



Choose an Application Load Balancer when you need a flexible feature set for your applications with HTTP and HTTPS traffic. Operating at the request level, Application Load Balancers provide advanced routing and visibility features targeted at application architectures, including microservices and containers.

[Create](#)

Network Load Balancer [Info](#)



Choose a Network Load Balancer when you need ultra-high performance, TLS offloading at scale, centralized certificate deployment, support for UDP, and static IP addresses for your applications. Operating at the connection level, Network Load Balancers are capable of handling millions of requests per second securely while maintaining ultra-low latencies.

[Create](#)

Gateway Load Balancer [Info](#)



Choose a Gateway Load Balancer when you need to deploy and manage a fleet of third-party virtual appliances that support GENEVE. These appliances enable you to improve security, compliance, and policy controls.

[Create](#)

► [Classic Load Balancer - previous generation](#)

[Close](#)

Create Application Load Balancer [Info](#)

The Application Load Balancer distributes incoming HTTP and HTTPS traffic across multiple targets such as Amazon EC2 instances, microservices, and containers, based on request attributes. When the load balancer receives a connection request, it evaluates the listener rules in priority order to determine which rule to apply, and if applicable, it selects a target from the target group for the rule action.

▶ How Elastic Load balancing works

Basic configuration

Load balancer name

Name must be unique within your AWS account and cannot be changed after the load balancer is created.

 MyALB

A maximum of 32 alphanumeric characters including hyphens are allowed, but the name must not begin or end with a hyphen.

Scheme [Info](#)

Scheme cannot be changed after the load balancer is created.

Internet-facing

An internet-facing load balancer routes requests from clients over the internet to targets. Requires a public subnet. [Learn more](#)

Internal

An internal load balancer routes requests from clients to targets using private IP addresses.

IP address type [Info](#)

Select the type of IP addresses that your subnets use.

IPv4

Recommended for internal load balancers.

Dualstack

Includes IPv4 and IPv6 addresses.

Network mapping [Info](#)

The load balancer routes traffic to targets in the selected subnets, and in accordance with your IP address settings.

VPC [Info](#)

Select the virtual private cloud (VPC) for your targets. Only VPCs with an internet gateway are enabled for selection. The selected VPC cannot be changed after the load balancer is created. To confirm the VPC for your targets, view your [target groups](#)

-
vpc-04d9c711cefab0f0b
IPv4: 172.31.0.0/16



Mappings [Info](#)

Select at least two Availability Zones and one subnet per zone. The load balancer routes traffic to targets in these Availability Zones only. Availability Zones that are not supported by the load

Mappings [Info](#)
Select at least two Availability Zones and one subnet per zone. The load balancer routes traffic to targets in these Availability Zones only. Availability Zones that are not supported by the load balancer or the VPC are not available for selection.

us-east-1a 

Subnet

subnet-0052457c992c500a8 

IPv4 settings

Assigned by AWS

us-east-1b 

Subnet

subnet-04b6cc762ee496df2 

IPv4 settings

Assigned by AWS

us-east-1c

us-east-1d

us-east-1e

us-east-1f

Security groups [Info](#)

A security group is a set of firewall rules that control the traffic to your load balancer.

Security groups

Select up to 5 security groups

Create new security group 

MySg sg-0fec712acdba4aa82  
VPC: vpc-04d9c711cefab0f0b

Listeners and routing [Info](#)

A listener is a process that checks for connection requests using the port and protocol you configure. The rules that you define for a listener determine how the load balancer routes requests to its registered targets.

▼ Listener HTTP:80

Protocol	Port
HTTP	: 80 1-65535

Default action [Info](#)

Forward to

MyLambdaTg

Target type: Lambda, IPv4



Remove



Create target group [Edit](#)

Listener tags - optional

Consider adding tags to your listener. Tags enable you to categorize your AWS resources so you can more easily manage them.

Add listener tag

You can add up to 50 more tags.

Add listener

▼ Add-on services - optional

Additional AWS services can be integrated with this load balancer at launch. You can also add these and other services after your load balancer is created by reviewing the "Integrated Services" tab for the selected load balancer.

AWS Global Accelerator [Info](#)

- Create an accelerator to get static IP addresses and improve the performance and availability of your applications. [Additional charges apply](#)

► Tags - optional

Consider adding tags to your load balancer. Tags enable you to categorize your AWS resources so you can more easily manage them. The 'Key' is required, but 'Value' is optional. For example, you can have Key = production-webserver, or Key = webserver, and Value = production.

Summary

Review and confirm your configurations. [Estimate cost](#)

Basic configuration [Edit](#)

MyALB

- Internet-facing
- IPv4

Security groups [Edit](#)

• MySg

sg-0fec712acdba4aa82 [Edit](#)

Network mapping [Edit](#)

VPC vpc-04d9c711cefab0f0b [Edit](#)

• us-east-1a subnet-0052457c992c500a8 [Edit](#)

• us-east-1b subnet-04b6cc762ee496df2 [Edit](#)

Listeners and routing [Edit](#)

• HTTP:80 defaults to

MyLambdaTg [Edit](#)

Add-on services [Edit](#)

None

Tags [Edit](#)

None

Attributes

Certain default attributes will be applied to your load balancer. You can view and edit them after creating the load balancer.

Cancel

Create load balancer



AWS Services Search [Alt+S] N. Virginia v oc labs/user2243686-supriya @ 8468-6651-513

AMI Catalog

▼ Elastic Block Store

- Volumes
- Snapshots
- Lifecycle Manager

▼ Network & Security

- Security Groups
- Elastic IPs
- Placement Groups
- Key Pairs
- Network Interfaces

▼ Load Balancing

Load Balancers

Target Groups [New](#)

▼ Auto Scaling

- Launch Configurations
- Auto Scaling Groups

Create Load Balancer Actions ▾

Filter by tags and attributes or search by keyword

Name	DNS name	State	VPC ID	Availability Zones	Type
myALB	myALB-371424504.us-east-...	Active	vpc-04d9c711cefab0f0b	us-east-1a, us-east-1b	application
MyALB	MyALB-1930751493.us-east-...	Active	vpc-04d9c711cefab0f0b	us-east-1a, us-east-1b	application

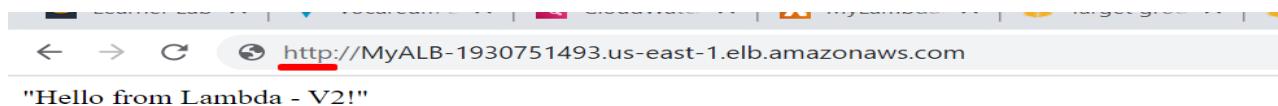
Load balancer: **MyALB**

Description [Listeners](#) [Monitoring](#) [Integrated services](#) [Tags](#)

Basic Configuration

Name	MyALB
ARN	arn:aws:elasticloadbalancing:us-east-1:846866515154:loadbalancer/app/MyALB/842e04cb9aba1c76
DNS name	MyALB-1930751493.us-east-1.elb.amazonaws.com <small>(A Record)</small>
State	Active
Type	application

paste in browser to check output



Kinesis and Lambda

#. Creating function

The screenshot shows the 'Create function' wizard in the AWS Lambda console. The top navigation bar includes 'AWS Services', a search bar, and account information ('N. Virginia' and 'vclabs/user2243686=supriya @ 8468-6651-5154'). The main title is 'Create function' with an 'Info' link. A note says 'AWS Serverless Application Repository applications have moved to Create application.' Below are three options: 'Author from scratch' (selected), 'Use a blueprint', and 'Container image'. The 'Basic information' section requires a function name ('EventSourceMappingFunc'), runtime ('Node.js 16.x'), and architecture ('x86_64'). It also includes a permissions section for choosing an execution role ('LabRole') or creating a new one. The 'Advanced settings' section is partially visible at the bottom. Buttons for 'Cancel' and 'Create function' are at the bottom right.

Author from scratch Use a blueprint Container image

Function name
Enter a name that describes the purpose of your function.
EventSourceMappingFunc

Use only letters, numbers, hyphens, or underscores with no spaces.

Runtime [Info](#)
Choose the language to use to write your function. Note that the console code editor supports only Node.js, Python, and Ruby.
Node.js 16.x

Architecture [Info](#)
Choose the instruction set architecture you want for your function code.
 x86_64 arm64

Permissions [Info](#)
By default, Lambda will create an execution role with permissions to upload logs to Amazon CloudWatch Logs. You can customize this default role later when adding triggers.

Change default execution role

Execution role
Choose a role that defines the permissions of your function. To create a custom role, go to the [IAM console](#).

Create a new role with basic Lambda permissions Use an existing role Create a new role from AWS policy templates

Existing role
Choose an existing role that you've created to be used with this Lambda function. The role must have permission to upload logs to Amazon CloudWatch Logs.
LabRole

View the LabRole role on the IAM console.

Advanced settings

Cancel **Create function**

Successfully created the function EventSourceMappingFunc. You can now change its code and configuration. To invoke your function with a test event, choose "Test".

Lambda > Functions > EventSourceMappingFunc

EventSourceMappingFunc

Throttle Copy ARN Actions ▾

Function overview Info

EventSourceMappingFunc (0)

+ Add trigger + Add destination

Description -

Last modified 3 seconds ago

Function ARN arn:aws:lambda:us-east-1:846866515154:function:EventSourceMappingFunc

Function URL Info -

Code Test Monitor Configuration Aliases Versions

Code source Info Upload from ▾

index.js

```
index.js
1 exports.handler = async (event) => {
2     // TODO implement
3     const response = {
4         statusCode: 200,
5         body: JSON.stringify('Hello from Lambda!'),
6     };
7     return response;
8 };
```

Environment Go to Anything (Ctrl-P)

1:1 JavaScript Spaces: 4

Code properties

Package size 304.0 byte	SHA256 hash BoZeaw/DbJn9WCuwWo55uYOBkfoWod6Mg572ZVNbSI=	Last modified November 15, 2022 at 08:42 PM CST
----------------------------	--	--

Runtime settings Info Edit

Runtime Node.js 16.x	Handler Info index.handler	Architecture Info x86_64
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Layers Info

Edit Add a layer

Merge order	Name	Layer version	Compatible runtimes	Compatible architectures	Version ARN
There is no data to display.					

The screenshot shows the AWS Lambda search results for the term 'kinesis'. The search bar at the top contains 'kinesis'. Below it, a sidebar on the left lists categories like Services (5), Features (5), Resources (New), Blogs (365), Documentation (1), Tutorials (2), and Events (6). The main content area displays a search result for 'Kinesis' with the subtext 'Work with Real-Time Streaming Data'. This result is highlighted with a red box. Below it are other services: Kinesis Analytics, Kinesis Video Streams, and AWS Glue DataBrew. A 'Features' section is also visible.

Kinesis Data Stream and Lambda

The screenshot shows the Amazon Kinesis Dashboard. The sidebar on the left includes sections for Dashboard, Data streams, Delivery streams, Analytics applications, and Resources (CloudFormation templates, AWS Glue Schema Registry). The main dashboard displays three cards: 'Data Streams' (Info) with 1 total data stream and a 'Create data stream' button (highlighted with a red box), 'Data Firehose' (Info) with 0 total delivery streams and a 'Create delivery stream' button, and 'Data Analytics' (Info) with 0 total analytics applications and a 'Create application' button.

Create data stream Info

Data stream configuration

Data stream name

MyDataStream

Acceptable characters are uppercase and lowercase letters, numbers, underscores, hyphens and periods.

Data stream capacity Info

Capacity mode

 On-demand

Use this mode when your data stream's throughput requirements are unpredictable and variable. With on-demand mode, your data stream's capacity scales automatically.

 Provisioned

Use provisioned mode when you can reliably estimate throughput requirements of your data stream. With provisioned mode, your data stream's capacity is fixed.

Provisioned shards

The total capacity of a stream is the sum of the capacities of its shards. Enter number of provisioned shards to see total data stream capacity.

1

Shard estimator

Minimum: 1, Maximum available: 498, Account quota limit: 500. Request shard quota increase [↗](#)

Total data stream capacity

Shard capacity is determined by the number of provisioned shards. Each shard ingests up to 1 MiB/second and 1,000 records/second and emits up to 2 MiB/second. If writes and reads exceed capacity, the application will receive throttles.

Write capacity

Maximum

1 MiB/second and 1,000 records/second

Read capacity

Maximum

2 MiB/second

[ⓘ Provisioned mode has a fixed-throughput pricing model. See Kinesis pricing for Provisioned mode ↗](#)

Data stream settings

You can edit the settings after the data stream has been created and is in the active status.

Setting	Value	Editable after creation
Capacity mode	Provisioned	<input checked="" type="checkbox"/> Yes
Provisioned shards	1	<input checked="" type="checkbox"/> Yes
Data retention period	1 day	<input checked="" type="checkbox"/> Yes
Server-side encryption	Disabled	<input checked="" type="checkbox"/> Yes
Monitoring enhanced metrics	Disabled	<input checked="" type="checkbox"/> Yes

Create

The screenshot shows the AWS Kinesis Data Stream creation page. A success message at the top states "Data stream MyDataStream successfully created." The main section displays the "MyDataStream" details. Under "Data stream summary", the "Status" is "Active". The "Capacity mode" is "Provisioned" and the "Data retention period" is "1 day". A tooltip "Stream ARN copied" points to the ARN: "arn:aws:kinesis:us-east-1:846866515154:stream/MyDataStream", which is highlighted with a red box. To the right, the "Creation time" is listed as "November 15, 2022 at 20:53 CST". Below the summary, tabs for "Applications", "Monitoring", "Configuration", "Data viewer", and "Enhanced fan-out (0)" are visible.

The screenshot shows the Vocareum Learner Lab interface. The URL in the browser is "labs.vocareum.com/main/main.php?m=clabide&mode=s&asnid=1250313&stepid=1250314". The interface includes a navigation bar with links like "Home", "My Classes", "Manage", "Help", "AWS Details", "Readme", and "Reset". On the left, there's a large white area with a "Launch Terminal" button, which is also highlighted with a red box. On the right, a sidebar titled "Learner Lab" contains a list of links: "Environment Overview", "Environment Navigation", "Access the AWS Management Console", "Region restriction", "Service usage and other restrictions", "Using the terminal in the browser", "Running AWS CLI commands", "Using the AWS SDK for Python", "Preserving your budget", "Accessing EC2 Instances", "SSH Access to EC2 Instances", "SSH Access from Windows", and "SSH Access from a Mac".

::::Change LambdaFunctionName and DataStreamARN in the following command line::::

```
aws lambda create-event-source-mapping --function-name MyKinesisFunction --event-source
arn:aws:kinesis:us-east-1:525718235721:stream/MyDataStream --batch-size 100 --starting-
position LATEST
```

```
aws kinesis put-record --stream-name MyDataStream --partition-key 1 --data "hello first record"
```

The screenshot shows a browser window with the URL labs.vocareum.com/main/main.php?m=clabide&mode=s&asnid=1250313&stepid=1250314. The page title is "Vocareum". On the left, there's a terminal window with AWS CLI commands. Two red arrows point to specific lines: one to the command `aws lambda create-event-source-mapping --function-name EventSourceMappingFunc --event-source arn:aws:kinesis:us-east-1:846866515154:stream/MyDataStream --batch-size 100 --starting-position LATEST`, and another to the command `aws kinesis put-record --stream-name MyDataStream --partition-key 1 --data "hello first record"`. On the right, there's a sidebar titled "Learner Lab" with various links like "Environment Overview", "Region restriction", etc.

```
dd.v1_v_SfE_1541872@runweb67334:~$ aws lambda create-event-source-mapping --function-name EventSourceMappingFunc --event-source arn:aws:kinesis:us-east-1:846866515154:stream/MyDataStream --batch-size 100 --starting-position LATEST
{
    "UUID": "f7aa37cc-99b6-41c5-8f20-460e36d8df29",
    "StartingPosition": "LATEST",
    "BatchSize": 100,
    "MaximumBatchingWindowInSeconds": 0,
    "ParallelizationFactor": 1,
    "EventSourceArn": "arn:aws:kinesis:us-east-1:846866515154:function:EventSourceMappingFunc",
    "FunctionArn": "arn:aws:lambda:us-east-1:846866515154:function:EventSourceMappingFunc",
    "LastModified": "2022-11-15T18:55:22.596000-08:00",
    "LastProcessingResult": "No records processed",
    "State": "Creating",
    "StateTransitionReason": "User action",
    "DestinationConfig": {
        "OnFailure": {}
    },
    "MaximumRecordAgeInSeconds": -1,
    "BisectBatchOnFunctionError": false,
    "MaximumRetryAttempts": -1,
    "TumblingWindowInSeconds": 0,
    "FunctionResponseTypes": []
}
dd.v1_v_SfE_1541872@runweb67334:~$ aws kinesis put-record --stream-name MyDataStream --partition-key 1 --data "hello first record"
{
    "ShardId": "shardId-000000000000",
    "SequenceNumber": "49635221982500961751567953916764404230711722103327948802"
}
```

#. Kinesis trigger added in Lambda function

AWS Lambda Functions > EventSourceMappingFunc

EventSourceMappingFunc

Throttle | Copy ARN | Actions ▾

Function overview [Info](#)

EventSourceMappingFunc (0)

Kinesis (2) + Add destination

+ Add trigger

Description

Last modified 16 minutes ago

Function ARN arn:aws:lambda:us-east-1:846866515154:function:EventSourceMappingFunc

Function URL [Info](#)

Code | Test | Monitor | Configuration | Aliases | Versions

Code source [Info](#) Upload from ▾

File Edit Find View Go Tools Window Test Deploy

index.js

```
1 exports.handler = async (event) => {
2     // TODO implement
3     const response = {
4         statusCode: 200,
5         body: JSON.stringify('Hello from Lambda!'),
6     };
7     return response;
8 };
9
```

Environment Go to Anything (Ctrl-P)

1:1 JavaScript Spaces: 4

Code properties

Package size 304.0 byte	SHA256 hash BoZeaw/DbJn9WCuwWo55uYOBfKfOwod6Mg372ZVNbSI	Last modified November 15, 2022 at 08:42 PM CST
----------------------------	--	--

Runtime settings [Info](#) Edit

Runtime Node.js 16.x	Handler Info index.handler	Architecture Info x86_64
-------------------------	---	---

Layers [Info](#)

Merge order	Name	Layer version	Compatible runtimes	Compatible architectures	Version ARN
There is no data to display.					

Feedback Looking for language selection? Find it in the new [Unified Settings](#) ▾

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```
aws kinesis put-record --stream-name myDataStream --data test" --partition-key 1
```

```
C:\Users\Asus\Downloads>aws kinesis put-record --stream-name myDataStream --data test --partition-key 1
{
  "ShardId": "shardId-000000000000",
  "SequenceNumber": "49629365934550496107114396096449191542083280193793818626"
}
```

```
▼ 2022-05-10T00:00:17.868-05:00      2022-05-10T05:00:17.856Z cb900b0f-4466-41c6-b60e-43d904bbf35f INFO {"Records":[{"kinesis":{"sequenceNumber": "49629365934550496107114396096449191542083280193793818626","data": "test","approximateArrivalTimestamp": 1652158817.456,"partitionKey": "1","kinesisSchemaVersion": "1.0","eventID": "shardId-000000000000:49629365934550496107114396096449191542083280193793818626","eventName": "aws:kinesis:record","invokedIdentityArn": "arn:aws:iam::864710665833:role/service-role/myKinesisFunc-role-se4owikax","awsRegion": "us-east-1","eventSourceARN": "arn:aws:kinesis:us-east-1:864710665833:stream/myDataStream"}]}
```

Copy

SQS, SNS and Lambda

```
const AWS = require("aws-sdk");
const sns = new AWS.SNS({apiVersion: '2010-03-31'});

exports.handler = async(event) => {
  console.log(JSON.stringify(event));
  var body = JSON.parse(event.Records[0].body);

  const params = {
    Message: body.message,
    Subject: body.subject,
    TopicArn: "arn:aws:sns:us-east-1:846866515154:MyTopic"
  };
  const res = await sns.publish(params).promise();

  const response = {
    statusCode: 200,
    body: params
  };
  return response;
};
```

AWS Services Search [Alt+S] N. Virginia v oc labs/user2243686=supriya

Amazon SNS > Topics > Create topic

Create topic

Details

Type [Info](#)
Topic type cannot be modified after topic is created

FIFO (first-in, first-out)

- Strictly-preserved message ordering
- Exactly-once message delivery
- High throughput, up to 300 publishes/second
- Subscription protocols: SQS

Standard

- Best-effort message ordering
- At-least once message delivery
- Highest throughput in publishes/second
- Subscription protocols: SQS, Lambda, HTTP, SMS, email, mobile application endpoints

Name **MyTopic**

Maximum 256 characters. Can include alphanumeric characters, hyphens (-) and underscores (_).

Display name - *optional*
To use this topic with SMS subscriptions, enter a display name. Only the first 10 characters are displayed in an SMS message. [Info](#)

My Topic

Maximum 100 characters.

Encryption - *optional*
Amazon SNS provides in-transit encryption by default. Enabling server-side encryption adds at-rest encryption to your topic.

Access policy - *optional*
This policy defines who can access your topic. By default, only the topic owner can publish or subscribe to the topic. [Info](#)

Data protection policy - *optional* [Info](#)
This policy defines which sensitive data to monitor and to prevent from being exchanged via your topic.

Delivery retry policy (HTTP/S) - *optional* [Info](#)
The policy defines how Amazon SNS retries failed deliveries to HTTP/S endpoints. To modify the default settings, expand this section.

Delivery status logging - *optional* [Info](#)
These settings configure the logging of message delivery status to CloudWatch Logs.

Tags - *optional*
A tag is a metadata label that you can assign to an Amazon SNS topic. Each tag consists of a key and an optional value. You can use tags to search and filter your topics and track your costs. [Learn more](#)

Cancel **Create topic**

Important changes for sending text messages (SMS) to US destinations
US mobile carriers have recently changed their regulations, and will require that all toll-free numbers (TFNs) complete a registration process with a regulatory body before September 30, 2022. If you currently have a toll-free number you must register your toll-free number by September 30, 2022 or you will no longer be able to use the toll-free number. [Learn more](#)

Amazon SNS > Subscriptions > Create subscription

Create subscription

Details

Topic ARN
 ←

Protocol
The type of endpoint to subscribe
 ←

Endpoint
An email address that can receive notifications from Amazon SNS.
 ←

i After your subscription is created, you must confirm it. [Info](#)

▶ **Subscription filter policy - optional** [Info](#)
This policy filters the messages that a subscriber receives.

▶ **Redrive policy (dead-letter queue) - optional** [Info](#)
Send undeliverable messages to a dead-letter queue.

[Cancel](#) [Create subscription](#) →

← → ↻ 🔒 us-east-1.console.aws.amazon.com/sns/v3/home?region=us-east-1#/topic/arn:aws:sns:us-east-1:846866515154:MyTopic

Amazon SNS X

Details	
Name	MyTopic
ARN	arn:aws:sns:us-east-1:846866515154:MyTopic
Type	Standard

◀ [Subscriptions](#) [Access policy](#) [Data protection policy](#) [Delivery retry policy \(HTTP/S\)](#) [Delivery status logging](#) [Encr](#) ▶

Subscriptions (1)						
		Edit	Delete	Request confirmation	Confirm subscription	Create subscription
Q Search						< 1 > ⚙
ID	Endpoint	Status	Protocol			
Pending confirmation	supriya.ghising@miu.edu	Pending confirmation	EMAIL			

confirm subscription from Email

Create queue

Details

Type

Choose the queue type for your application or cloud infrastructure.

ⓘ You can't change the queue type after you create a queue.

Standard [Info](#)

- At-least-once delivery, message ordering isn't preserved
- At-least once delivery
 - Best-effort ordering

FIFO [Info](#)

- First-in-first-out delivery, message ordering is preserved
- First-in-first-out delivery
 - Exactly-once processing

Name

MyFifoQueue fifo

[Create queue](#)

A queue name is case-sensitive and can have up to 80 characters. You can use alphanumeric characters, hyphens (-), and underscores (_).

Configuration

Set the maximum message size, visibility to other consumers, and message retention. [Info](#)

Visibility timeout [Info](#)

30 ▾

Message retention period [Info](#)

4 ▾

Successfully created the function AsyncTriggerFunc. You can now change its code and configuration. To invoke your function with a test event, choose "Test".

Lambda > Functions > AsyncTriggerFunc

AsyncTriggerFunc

Throttle Copy ARN Actions ▾

Function overview Info

Description -

Last modified 3 seconds ago

Function ARN arn:aws:lambda:us-east-1:846866515154:function:AsyncTriggerFunc

Function URL Info -

Code Test Monitor Configuration Aliases Versions

Code source Info Upload from ▾

index.js

```
1 exports.handler = async (event) => {
2     // TODO implement
3     const response = {
4         statusCode: 200,
5         body: JSON.stringify('Hello from Lambda!'),
6     };
7     return response;
8 };
```

Environment Go to Anything (Ctrl-P)

1:1 JavaScript Spaces: 4

Code properties

Package size 304.0 byte SHA256 hash BoZeaw/DbJn9WCuwWo55uYOBfKfowod6Mg572ZVNbSI Last modified November 15, 2022 at 09:00 PM CST

Runtime settings Info Edit

Runtime Node.js 16.x Handler Info index.handler Architecture Info x86_64

Layers Info Edit Add a layer

Merge order	Name	Layer version	Compatible runtimes	Compatible architectures	Version ARN
There is no data to display.					

The screenshot shows the AWS Lambda console interface. At the top, there's a navigation bar with tabs: Code (highlighted in orange), Test, Monitor, Configuration, Aliases, and Versions. Below the navigation bar, the main area displays a function named "AsyncTriggerFunc".

On the left, there's a sidebar with a tree view showing "Layers" and "(0)". On the right, there are sections for "Description", "Last modified" (5 seconds ago), "Function ARN" (arn:aws:lambda:us-east-1:846866515154:function:AsyncTriggerFunc), and "Function URL" (Info).

The central part of the screen shows the "Code source" tab with an "Info" link. It features a toolbar with "File", "Edit", "Find", "View", "Go", "Tools", "Window", "Test" (highlighted in orange), "Deploy", and "Upload from".

The code editor window contains the file "index.js" under the "AsyncTriggerFunc" environment. The code is as follows:

```
1 const AWS = require("aws-sdk");
2 const sns = new AWS.SNS({apiVersion: '2010-03-31'});
3
4 exports.handler = async(event) => {
5   console.log(JSON.stringify(event));
6   var body = JSON.parse(event.Records[0].body);
7
8   const params = {
9     Message: body.message,
10    Subject: body.subject,
11    TopicArn: "arn:aws:sns:us-east-1:846866515154:MyTopic"
12  };
13  const res = await sns.publish(params).promise();
14
15  const response = {
16    statusCode: 200,
17    body: params
18  };
19  return response;
20};
21
```

Red annotations are present: a red box surrounds the "SQS" icon in the triggers list; a red arrow labeled "3" points to the "Test" button in the toolbar; a red arrow labeled "2" points to the "Deploy" button; and a red arrow labeled "1" points to the "TopicArn" value in the code editor.

SQS aws queue

Choose or enter the ARN of an SQS queue.

arn:aws:sqs:us-east-1:846866515154:MyFifoQueue.fifo

Activate trigger
Select to activate the trigger now. Keep unchecked to create the trigger in a deactivated state for testing (recommended).

Batch size - optional
The number of records in each batch to send to the function.
10
The maximum is 10,000 for standard queues and 10 for FIFO queues.

Batch window - optional
The maximum amount of time to gather records before invoking the function, in seconds.
0
When the batch size is greater than 10, set the batch window to at least 1 second.

Additional settings

Report batch item failures
Allow your function to return a partial successful response for a batch of records.

Filter criteria
Define the filtering criteria to determine whether or not to process an event. Each filter must be in a valid JSON format in filter rule syntax. Lambda processes an event if any one of the filters are met. Otherwise, Lambda discards the event. [Learn more](#).

{"body":{"subject":["apple orchard"]}}

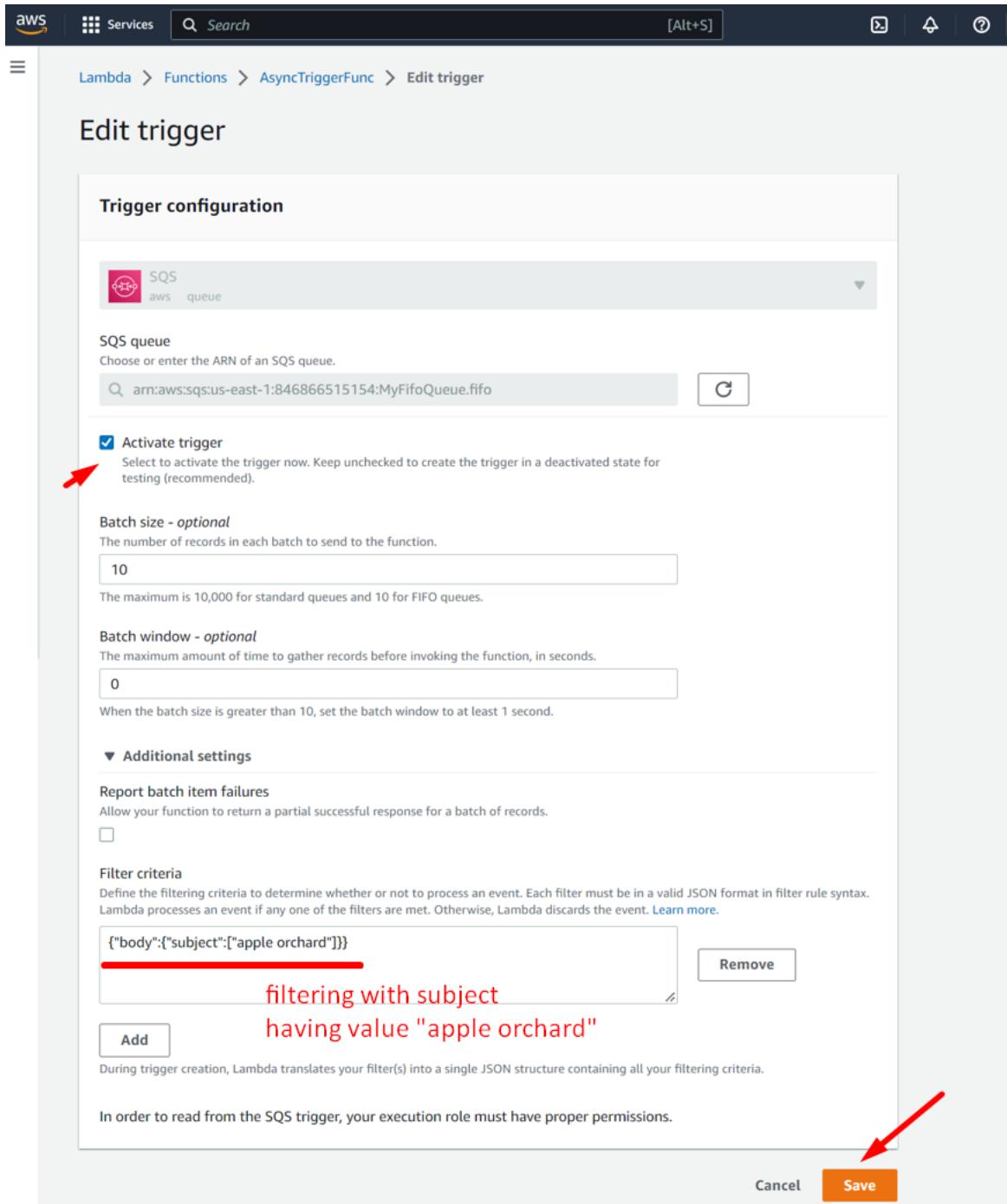
filtering with subject having value "apple orchard"

Add **Remove**

During trigger creation, Lambda translates your filter(s) into a single JSON structure containing all your filtering criteria.

In order to read from the SQS trigger, your execution role must have proper permissions.

Cancel **Save**



"body" -> indicates the message is coming from the body when you publish a message

"subject" -> indicates the key to filter

"apple orchard" -> indicates the value to find in filter

The screenshot shows the AWS SQS console with the following details:

- Queue Name:** MyFifoQueue.fifo
- Type:** FIFO
- ARN:** arn:aws:sqs:us-east-1:846866515154:MyFifoQueue.fifo
- Encryption:** Amazon SQS key (SSE-SQS)
- URL:** https://sqs.us-east-1.amazonaws.com/846866515154/MyFifoQueue.fifo
- Dead-letter queue:** -

At the top right, there are buttons for **Edit**, **Delete**, **Purge**, **Send and receive messages** (which is highlighted with a red box), and **Start DLQ redrive**.

When publishing the message in SQS. You need to write the body in a JSON format and add the filter key value pair. See the Example below.

The screenshot shows the 'Send and receive messages' interface for the 'MyFifoQueue.fifo' queue:

Send message (highlighted with a red box)

Your message has been sent and is ready to be received.

Message body
Enter the message to send to the queue.
>{"subject": "apple orchard", "message": "Hello world 123!"}

Message group ID
The tag that specifies that a message belongs to a specific message group.
201

Message deduplication ID - Optional
The token used for deduplication of messages within the deduplication interval.
201

Message attributes - Optional (Info)

The screenshot shows the Microsoft Outlook webmail interface. On the left, the navigation pane includes 'Favorites' (Inbox, Sent Items, Drafts) and 'Folders' (Inbox, Drafts, Sent Items, Deleted It...). The main area displays the 'Inbox' with 113 messages. One message from 'AWS Notifications' is highlighted with a red box. The message subject is 'apple orchard' and the body contains 'Hello world 123! If you wish to stop ...'. To the right, a detailed view of this message is shown in a red-bordered box. The recipient is 'Supriya Ghising'. The message body is 'Hello world 123!', which is also highlighted with a red box. Below the message, there is a note about unsubscribing and a link to the unsubscribe page. At the bottom of the detailed view, there are 'Reply' and 'Forward' buttons.

Your browser supports setting Outlook on the Web as the default email ... [Try it now](#) [Ask again later](#) [Don't show again](#)

Inbox 113

Reviewed Resume

Today

AWS Notifications **apple orchard** 2:06 PM
Hello world 123! If you wish to stop ...

AWS Notifications **apple** 2:02 PM
Hello world 12! If you wish to stop r...

AWS Notifications **apple** 1:46 PM
Hello world! If you wish to stop recei...

AWS Notifications **email** 1:19 PM

apple orchard

AWS Notifications <no-reply@sns.amazonaws.com>

To: Supriya Ghising

Wed 11/16/2022 2:06 PM

Hello world 123!

--

If you wish to stop receiving notifications from this topic, please click or visit the link below to unsubscribe:

<https://sns.us-east-1.amazonaws.com/unsubscribe.html?SubscriptionArn=arn:aws:sns:us-east-1:846866515154:MyTopic-7069aafc-9a82-4e70-98e2-4d5f1b9b5f5d&Endpoint=supriya.ghising@mii.edu>

Please do not reply directly to this email. If you have any questions or comments regarding this email, please contact us at <https://aws.amazon.com/support>

[Reply](#) [Forward](#)

The screenshot shows the AWS Lambda console for a function named "MyEventTest". The "Event sharing settings" section is set to "Private". The "Template - optional" dropdown is set to "aws-sqs-receive-message". The "Event JSON" section displays a sample event payload for an SQS message. A red arrow points to the "body" field of the JSON, which contains a subject line and a message body.

```
1  [ {  
2    "Records": [  
3      {  
4        "messageId": "19dd0b57-b21e-4ac1-bd88-01bbb068cb78",  
5        "receiptHandle": "MessageReceiptHandle",  
6        "body": "\n\"subject\": \"apple tree\",\\n\"message\": \"This message is going to be filtered\",  
7        "attributes": {  
8          "ApproximateReceiveCount": "1",  
9          "SentTimestamp": "1523232000000",  
10         "SenderId": "123456789012",  
11         "ApproximateFirstReceiveTimestamp": "152323200001"  
12       },  
13       "messageAttributes": {},  
14       "md5OfBody": "{{md5_of_body}}",  
15       "eventSource": "aws:sqs",  
16       "eventSourceARN": "arn:aws:sqs:us-east-1:123456789012:MyQueue",  
17       "awsRegion": "us-east-1"  
18     }  
19   ]  
20 }
```