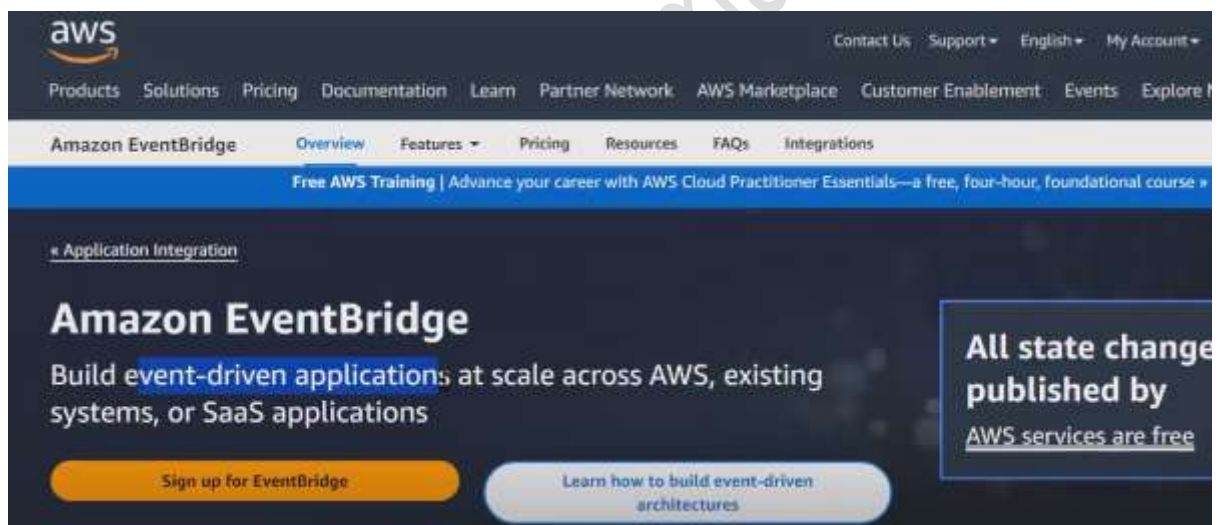




AWS Session 7

Summary [20-03-2024]

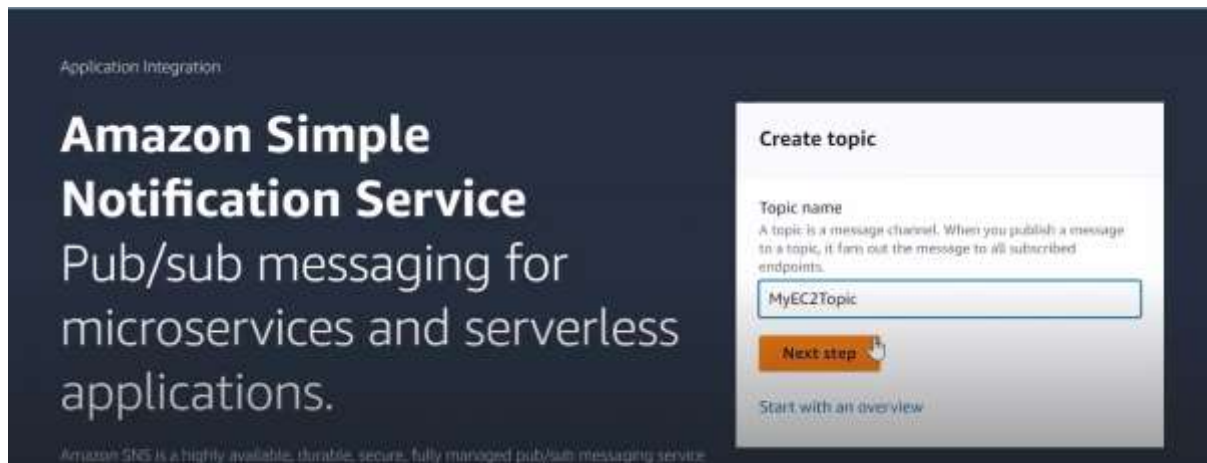
- **Event** – whenever we do anything in any AWS service, AWS keeps track of everything this is a known event. E.g., ec2 instance launched, stopped, or terminated, lambda function run/stop.
- **Trigger** – When some event occurs e.g., ec2 instance current state is changed (running to stop) instantly notify the subscribed user via some email or SMS. This concept is called a **trigger**.
- **Event-Driven Architecture** – Managing such events and triggers is known as EDA.
- AWS service for EDA is **Amazon EventBridge**



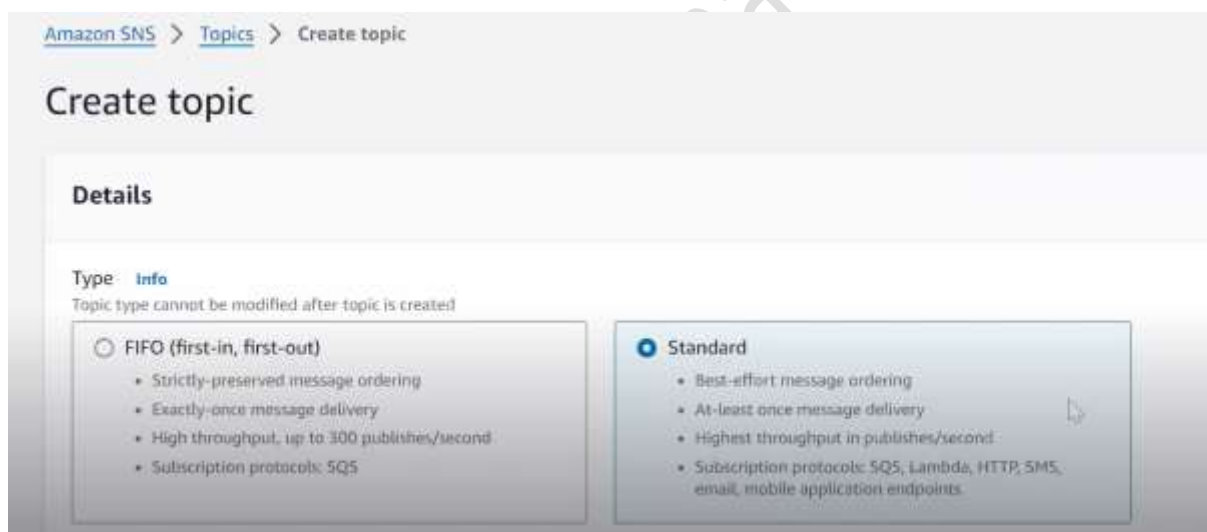
- Most service-based and product-based organizations use the service Amazon EventBridge.
 - Make my trip
 - Ola
 - Uber
 - Netflix
 - Hotstar and many more.

[AWS]

- **Demonstration** – If some ec2 instance goes down notify the user automatically using Amazon EventBridge.
- First prepare the SNS topic
 - Go to SNS and give the topic name.



- Choose the type as 'standard'

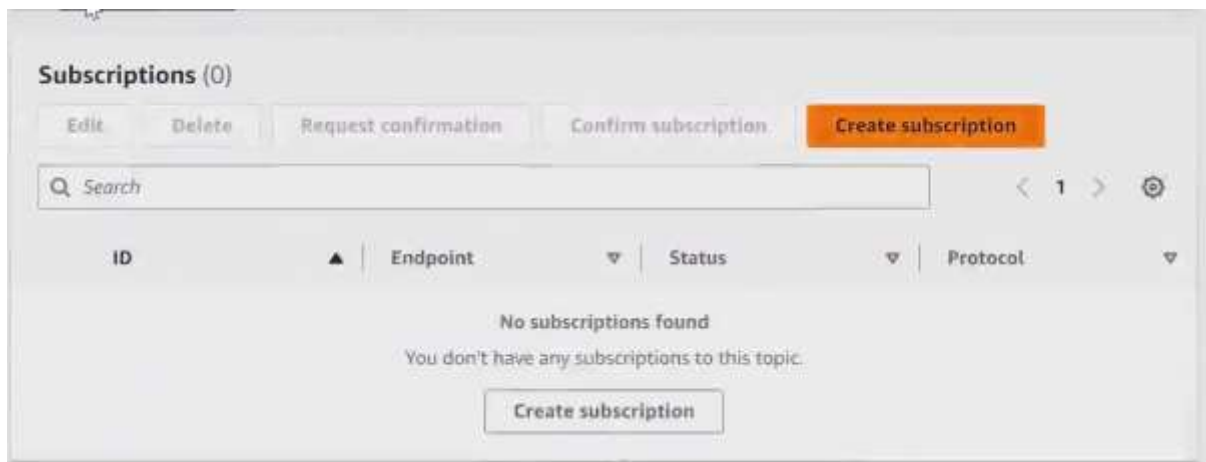


- Click on 'Create topic'



[AWS]

- Click on 'create subscription' to add the emails



- Choose email as 'protocol' and give an email address in 'endpoint'.

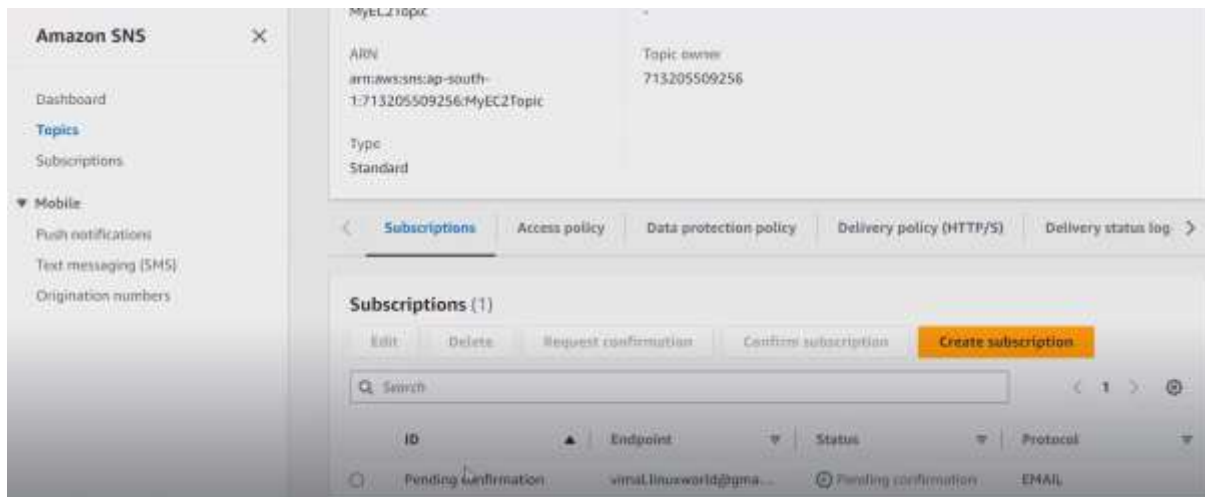
A screenshot of the 'Details' form in the AWS SNS console. It includes a 'Topic ARN' field with a search icon and a value 'arn:aws:sns:ap-south-1:713205509256:MyEC2Topic'. Below is a 'Protocol' dropdown menu set to 'Email'. The 'Endpoint' field contains the email address 'vimal.linuxworld@gmail.com'. A blue information bar at the bottom states: 'After your subscription is created, you must confirm it. info'.

- Click on 'Create Subscription'

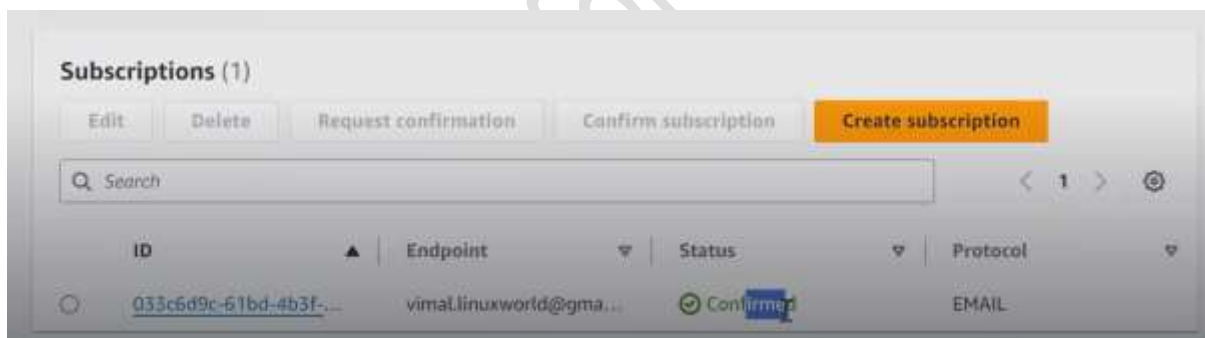
A screenshot of the 'Create Subscription' confirmation screen. It shows two optional policies: 'Subscription filter policy' and 'Redrive policy (dead-letter queue)'. At the bottom right, there are 'Cancel' and 'Create subscription' buttons.

- Go to the created topic and we can see the email is added but the confirmation status is pending. Go to your email inbox and confirm the subscription.

[AWS]

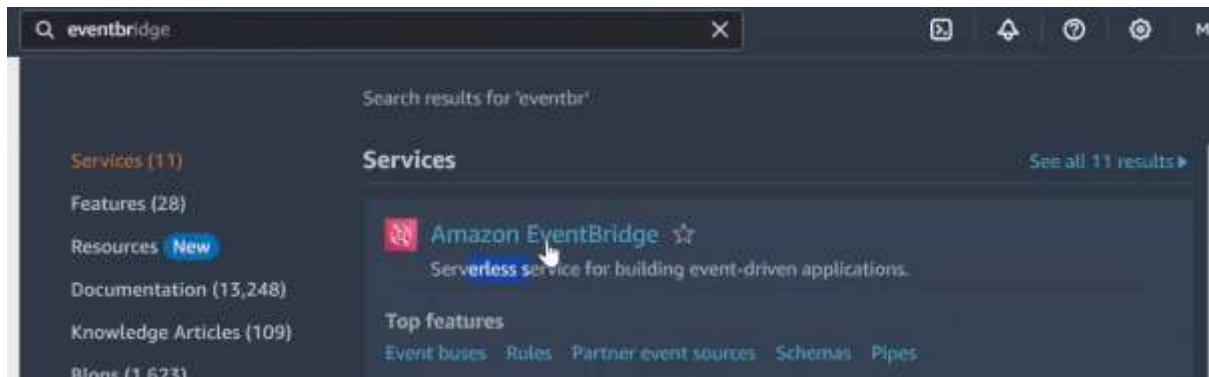


After confirming on email, the status is confirmed.

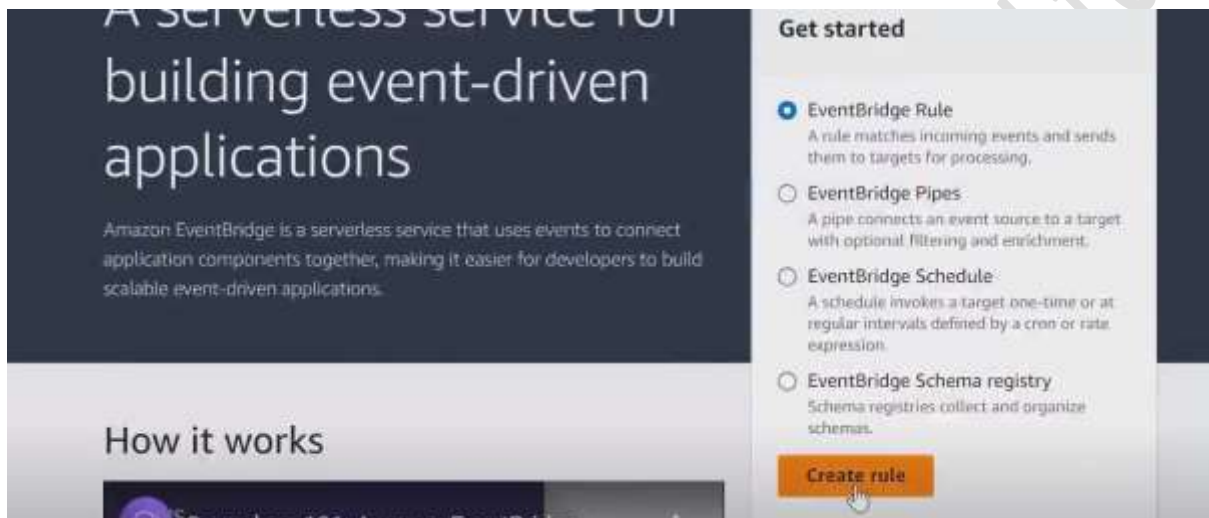


- Amazon EventBridge keeps on checking all event occurrences, for the event occurrence we can create some rules to be performed.
- Go to Amazon EventBridge and create a rule.

[AWS]



➤ Click on 'create rule'



➤ Give the rule name, choose 'Rule type' as 'Rule with an event pattern', and click on 'next'

A screenshot of the 'Create rule' form in the AWS console. The form has several sections: 'Name' with a text input field containing 'MyRuleEC2Stopped'; 'Description - optional' with a text input field containing 'Enter description'; 'Event bus' with a dropdown menu set to 'default'; 'Enable the rule on the selected event bus' with a checked radio button; 'Rule type' with two options: 'Rule with an event pattern' (selected) and 'Schedule'. The 'Rule with an event pattern' option has a description: 'A rule that runs when an event matches the defined event pattern. EventBridge sends the event to the specified target.' The 'Schedule' option has a description: 'A rule that runs on a schedule.' At the bottom right, there are 'Cancel' and 'Next' buttons.

- As we selected 'Rule with an event pattern', we have to create an event pattern which means at what event pattern trigger happens.
 - Choose 'Event source' as 'AWS events or EventBridge partner events'

The screenshot shows the 'Build event pattern' step in the Amazon EventBridge console. The breadcrumb navigation is 'Amazon EventBridge > Rules > Create rule'. The left sidebar shows the progress: Step 1: Define rule detail, Step 2: Build event pattern (active), Step 3: Select target(s), Step 4 (optional): Configure tags, and Step 5: Review and create. The main content area is titled 'Build event pattern' with an 'info' link. Under the 'Event source' section, there are three radio button options: 'AWS events or EventBridge partner events' (selected), 'Other', and 'All events'. Descriptions are provided for each option.

- Choose 'sample event type' as 'AWS events'.
- In 'sample events' choose your event, in our case, it is 'EC2 instance Terminate Successfully'

This screenshot shows the 'Sample events' section of the console. It includes a heading 'You can reference the sample event when you write the event pattern...' and a link to learn more about required fields. Below this, the 'Sample event type' section has three radio button options: 'AWS events' (selected), 'EventBridge partner events', and 'Enter my own'. The 'Sample events' section has a filter box 'Filter by event source and type or by keyword.' with a search input containing 'ec2'. A dropdown list shows several EC2-related events, with 'EC2 Instance Terminate Successful' highlighted and a mouse cursor pointing at it. Other visible events include 'EC2 Instance Launch Successful', 'EC2 Instance Launch Unsuccessful', 'EC2 Instance Terminate Unsuccessful', 'EC2 Instance-launch Lifecycle Action', and 'EC2 Instance-terminate Lifecycle Action'.

- Choose 'method' as 'use pattern form' because we are working on the event pattern provided by EventBridge.

[AWS]

Creation method

Method

- ☐ Use schema
Use an Amazon EventBridge schema to generate the event pattern.
- ☒ Use pattern form
Use a template provided by EventBridge to create an event pattern.
- ☐ Custom pattern (JSON editor)
Write an event pattern in JSON.

- Choose 'event source' as 'AWS service' and 'AWS service' as 'ec2'.

Event pattern Info

Event source
AWS service or EventBridge partner as source

AWS services ▼

AWS service
The name of the AWS service as the event source

EC2 ▼

- Choose 'Event type' as 'EC2 Instance State-Change Notification'

EBS Snapshot Notification

Q

All events

- AWS API Call via CloudTrail
- EBS Fast Snapshot Restore State-change Notification
- EBS Multi-Volume Snapshots Completion Status
- EBS Snapshot Notification ✓
- EBS Volume Notification
- EC2 Fast Launch State-change Notification
- EC2 Instance Rebalance Recommendation
- EC2 Instance State-change Notification
- EC2 Spot Instance
- EC2 Spot Instance Request Fulfillment

Copy Test pattern Edit pattern

[AWS]

- In the event type, we can add specific details, in the first specification, we can add a specific state of ec2. For now, we selected 'any state'.
- In the second specification, we have added an instance ID to monitor that particular OS.

The screenshot displays the AWS Management Console. At the top, the 'Instances (1/5)' page is visible, showing a table of EC2 instances. The first instance is 'Stopped' (i-0a3e8376a98203542) and the second is 'Running' (i-01ad50b22e9a03ab6). Below this, the 'EventBridge' console is open, showing the 'EC2 Instance State-change Notification' event type. Under 'Event Type Specification 1', 'Any state' is selected. Under 'Event Type Specification 2', 'Specific instance Id(s)' is selected, and the instance ID 'i-01ad50b22e9a03ab6' is entered in the text field. Buttons for 'Copy', 'Test pattern', 'Edit pattern', 'Remove', and 'Add' are visible.

- The event pattern is built. See the details written in JSON format that we added.
- If this pattern matches an event then EventBridge triggers some service (SNS in our case).

[AWS]

The screenshot shows the 'Event pattern' configuration page in the AWS EventBridge console. On the left, under 'Event source', 'AWS services' is selected. Under 'AWS service', 'EC2' is selected. Under 'Event type', 'EC2 Instance State-change Notification' is selected. Under 'Event Type Specification 1', 'Any state' is selected. On the right, the 'Event pattern' JSON is displayed:

```
{
  "source": ["aws-ec2"],
  "detail-type": ["EC2 Instance State-change Notification"],
  "detail": {
    "instance-id": ["i-01ad50b22e9a03ab6"]
  }
}
```

 At the bottom right of the pattern area are buttons for 'Copy', 'Test pattern', and 'Edit pattern'.

➤ Click on 'next'

This screenshot shows the 'Event Type Specification 2' section of the configuration. 'Any instance' is selected. Under 'Specific instance Id(s)', the instance ID 'i-01ad50b22e9a03ab6' is entered in a text field. Below the text field is a 'Remove' button. At the bottom left is an 'Add' button. At the bottom right are 'Cancel', 'Previous', and 'Next' buttons. The 'Next' button is highlighted with a mouse cursor.

- Add the target.
- **Target** – what we want to be triggered on the event pattern match.

Target 1

Target types
Select an EventBridge event bus, EventBridge API destination (SaaS partner), or another AWS service as a target.

☐ EventBridge event bus
☐ EventBridge API destination
☒ AWS service

Select a target [Info](#)
Select target(s) to invoke when an event matches your event pattern or when schedule is triggered (limit of 5 targets per rule)

Select target type

- Select a target as 'SNS topic'

Inspector assessment template
Kinesis stream
Lambda function
SageMaker Pipeline
SNS topic
SQS queue
Step Functions state machine
Systems Manager Automation
Select target type

Add another target Cancel Skip to Review and create Previous Next

- Select the topic we created and click on 'next'.

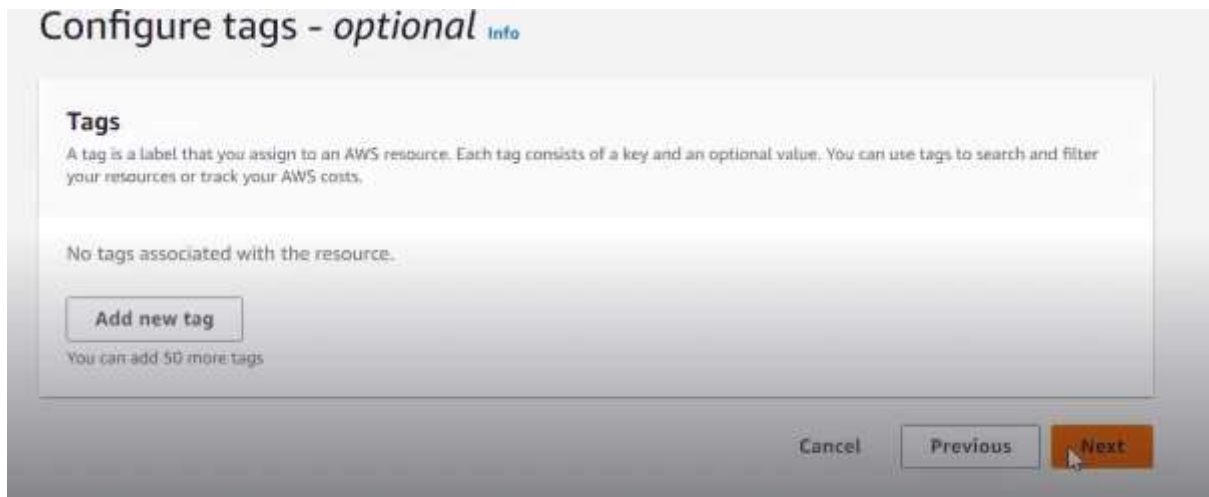
Topic

Select or type to search...

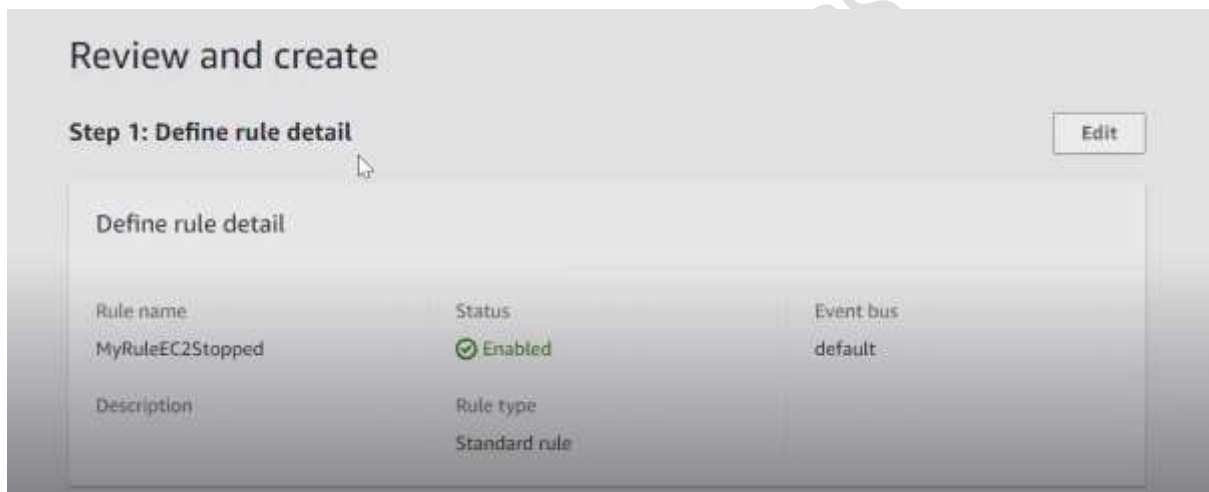
MyEC2Topic

Add another target Cancel Skip to Review and create Previous Next

- We can add some tags otherwise click on 'next'



- According to this rule whenever the ec2 instance state is changed SNS service is triggered and sent the mail.
 - If some change is required, can be edited from here.



[AWS]

Step 3: Select target(s) Edit

Targets

Details	Target Name	Type	Arn	Input	Role
▼	MyEC2Topic ↗	SNS topic	arn:aws:sns:ap-south-1:713205509256:MyEC2Topic	Matched event	-

Input to target: Matched event

Additional parameters: --

Dead-letter queue (DLQ): -

➤ Click on 'Create rule'

Step 4: Configure tag(s) Edit

Tags (0)

A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.

Key	Value
No tags associated with this resource.	

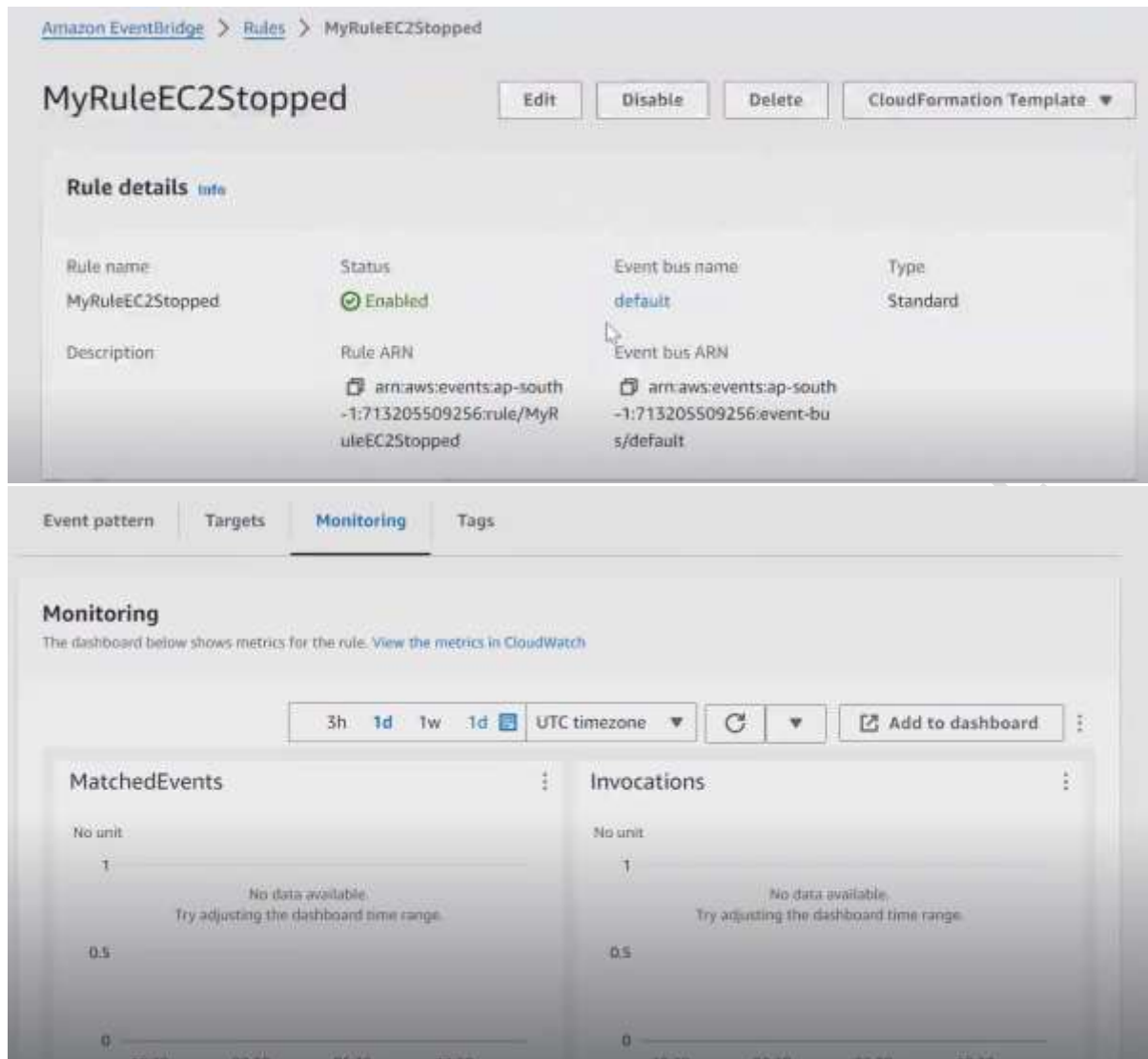
Cancel Previous Create rule

- So this entire process is called the **EventBridge rule**.
- If we go to the rule, in the monitoring section matched events and other records will be updated.

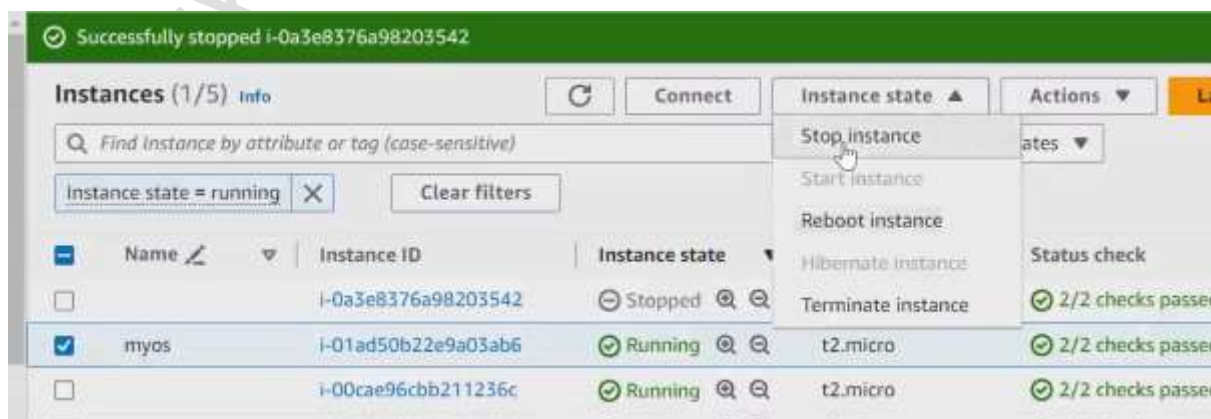
Rules (1) Refresh Delete Enable Edit CloudFormation Template Create rule

Any status < 1 > ⊙

<input type="checkbox"/>	Name	Status	Type	ARN	Description
<input type="checkbox"/>	MyRuleEC2Stopped	Enabled	Standard	arn:aws:events:ap-south-1:713205509256:rule/MyRuleEC2Stopped	-

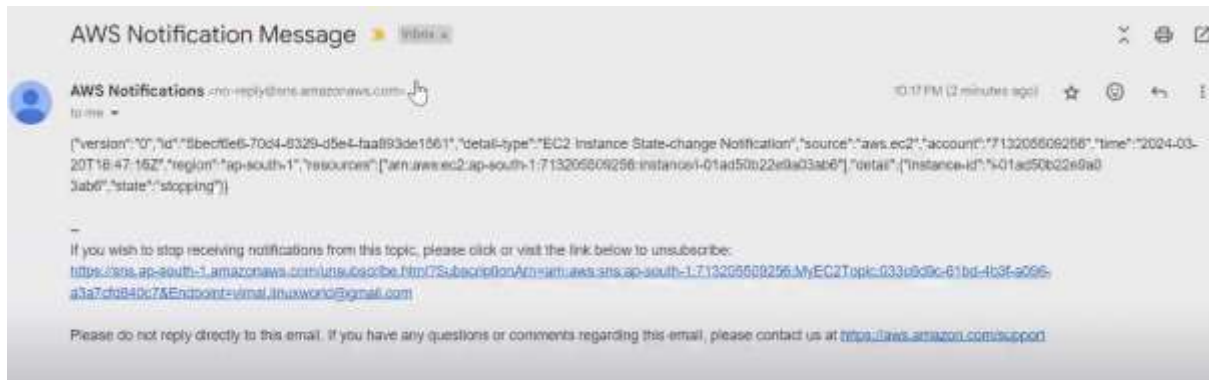


- As soon as I shut down the OS this info lands on the event bridge bus.
- Notification is sent to email instantly.



[AWS]

➤ Check the email



- In the event bridge rule, the monitoring section will be updated, it takes some time.