

Create an Alarm Using CloudWatch

Project agenda: To create an alarm using CloudWatch that will allow you to watch CloudWatch metrics (CPU Utilization) with a given threshold and receive notifications when the metrics fall outside the threshold levels that you configure.

Description: Launch 3 virtual machine instances (Linux). Perform tasks on these VMS of your choice. Set up a dashboard with metrics showing CPU Utilization of all 3 VMS.

Tools required: AWS account

Prerequisites: None

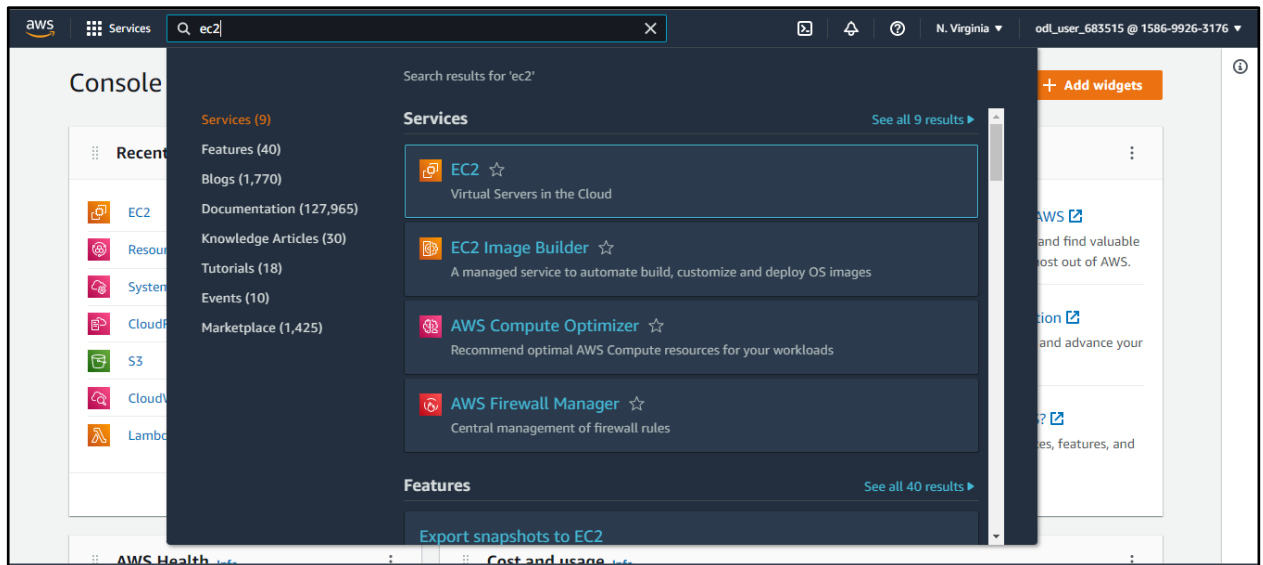
Expected deliverables: CloudWatch metrics

Steps to be followed:

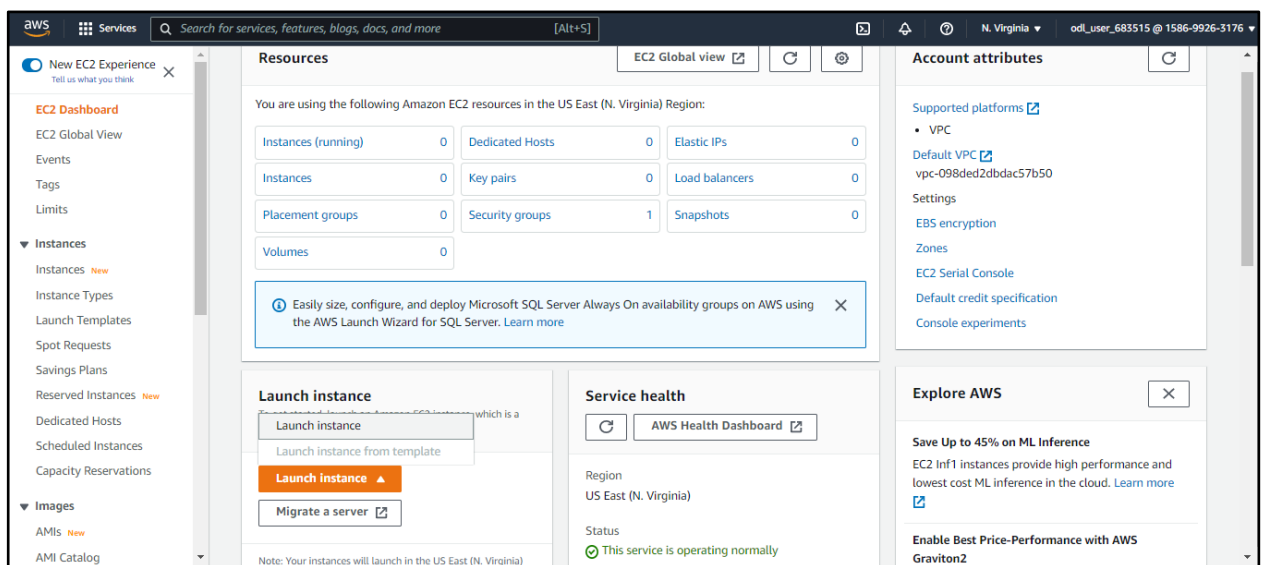
1. Launch 3 Linux VMs
2. Connect SSH into VMs
3. Perform Linux-related tasks on VM
4. Work with CloudWatch services
5. Select metrics for CPU utilization for all 3 VMs
6. Create an alarm and send a notification through SNS

Step 1: Launch 3 Linux VMs

- 1.1 In the Amazon console, search for **EC2** in the search bar:



1.2 In the AWS EC2 console, select **Launch Instance**:



1.3 Add a name, select Amazon Linux Machine and t2.micro Instance type

1.4 Create a new keypair:

Create key pair

Key pairs allow you to connect to your instance securely.

Enter the name of the key pair below. When prompted, store the private key in a secure and accessible location on your computer. **You will need it later to connect to your instance.** [Learn more](#)

Key pair name

mytestdemo

The name can include upto 255 ASCII characters. It can't include leading or trailing spaces.

Key pair type

☒ RSA
RSA encrypted private and public key pair

☐ ED25519
ED25519 encrypted private and public key pair (Not supported for Windows instances)

Private key file format

☒ .pem
For use with OpenSSH

☐ .ppk
For use with PuTTY

CancelCreate key pair

1.5 Click on the **Create key pair** button

1.6 Click on the **Launch Instance** button

▼ Key pair (login) Info

You can use a key pair to securely connect to your instance. Ensure that you have access to the selected key pair before you launch the instance.

Key pair name - required

mytestdemo

▼

↺

Create new key pair

▶ Network settings

Edit

▶ Configure storage Info

Advanced

▶ Advanced details Info

Number of instances Info

1

New security group

Storage (volumes)

1 volume(s) - 8 GiB

📘

Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance usage on free tier AMIs per month, 30 GiB of EBS storage, 2 million I/Os, 1 GB of snapshots, and 100 GB of bandwidth to the internet.

✕

Cancel

Launch Instance

1.7 Create 2 more instances following the same steps:

Instances (3) Info

↺ Connect

Instance state ▼

Actions ▼

Launch instances ▼

Search

<input type="checkbox"/>	Name ▲	Instance ID	Instance state ▼	Instance type ▼	Status check	Alarm status	Availability Zone ▼	Public IPv4 DNS ▼	Public IPv4 ... ▼	Elastic IP ▼
<input type="checkbox"/>	mydemoVM1	i-06a6565599586b135	Running	t2.micro	2/2 checks passed	No alarms +	us-east-1a	ec2-54-164-27-26.com...	54.164.27.26	-
<input type="checkbox"/>	mydemoVM2	i-0256bab82d5d7a5c8	Running	t2.micro	Initializing	No alarms +	us-east-1a	ec2-3-82-197-58.comp...	3.82.197.58	-
<input type="checkbox"/>	mydemoVM3	i-086f7951cfe17181	Running	t2.micro	Initializing	No alarms +	us-east-1a	ec2-34-207-128-139.co...	34.207.128.139	-

Step 2: Connect SSH into VMs

2.1 Select the Instance and click on the **Connect** option:

Instances (1/1) Info

Search

Connect Instance state Actions Launch Instances

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4
mydemoVM1	i-06a6565599586b135	Running	t2.micro	-	No alarms	us-east-1a	ec2-54-164-27-26.compute-1.amazonaws.com

Instance: i-06a6565599586b135 (mydemotest1)

Details Security Networking Storage Status checks Monitoring Tags

▼ Instance summary Info

Instance ID i-06a6565599586b135 (mydemotest1)	Public IPv4 address 54.164.27.26 open address	Private IPv4 addresses 172.31.90.54
IPv6 address -	Instance state Running	Public IPv4 DNS ec2-54-164-27-26.compute-1.amazonaws.com open address

2.2 Click on the **Connect** button

EC2 > Instances > i-06a6565599586b135 > Connect to instance

Connect to instance Info

Connect to your instance i-06a6565599586b135 (mydemotest1) using any of these options

EC2 Instance Connect Session Manager SSH client EC2 serial console

Instance ID
i-06a6565599586b135 (mydemotest1)

Public IP address
54.164.27.26

User name
ec2-user

Connect using a custom user name, or use the default user name ec2-user for the AMI used to launch the instance.

Note: In most cases, the guessed user name is correct. However, read your AMI usage instructions to check if the AMI owner has changed the default AMI user name.

Cancel **Connect**

Step 3: Perform Linux-related tasks on VM

3.1 For example: Run `sudo yum install stress -y`:

```

  _ _ | _ _ | _ _ |
 _ _ | ( _ _ | /   Amazon Linux 2 AMI
 _ _ | \ _ _ | _ _ |

https://aws.amazon.com/amazon-linux-2/
5 package(s) needed for security, out of 14 available
Run "sudo yum update" to apply all updates.
[ec2-user@ip-172-31-90-54 ~]$
```

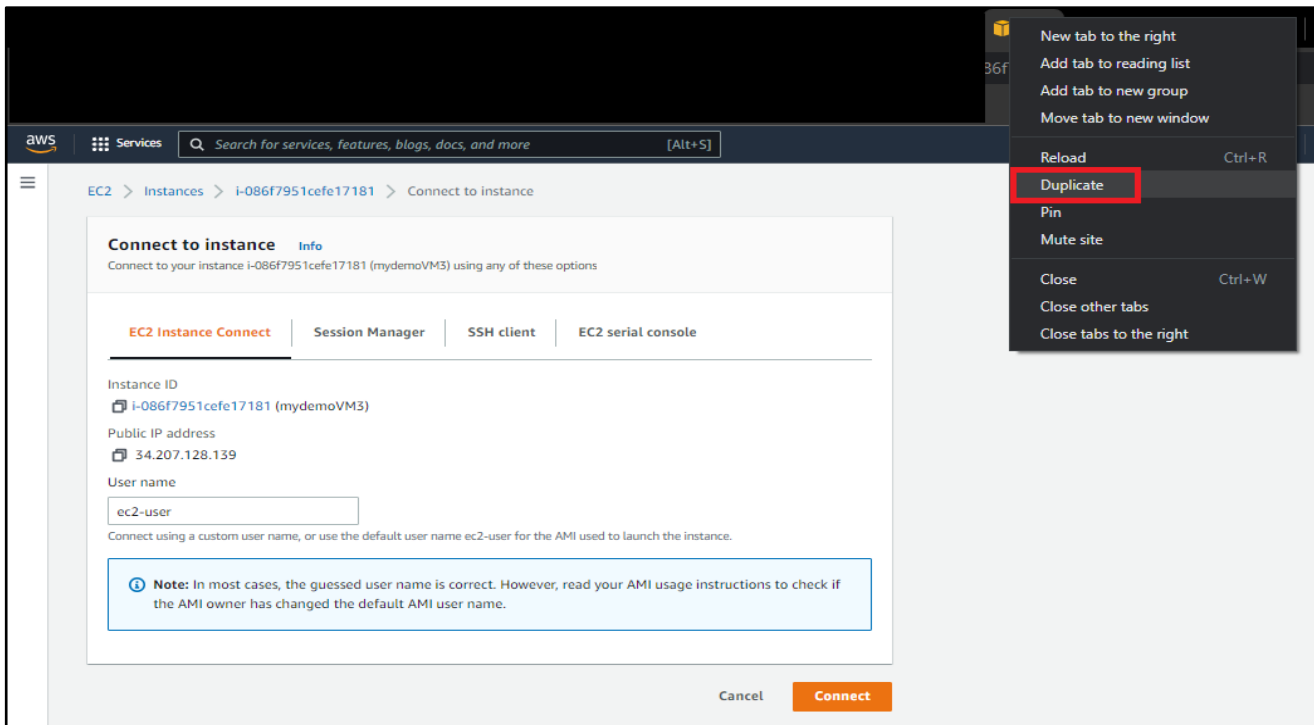
```

[ec2-user@ip-172-31-90-54 ~]$ sudo yum install stress -y
Loaded plugins: extras_suggestions, langpacks, priorities, update-motd
No package stress available.
Error: Nothing to do
```

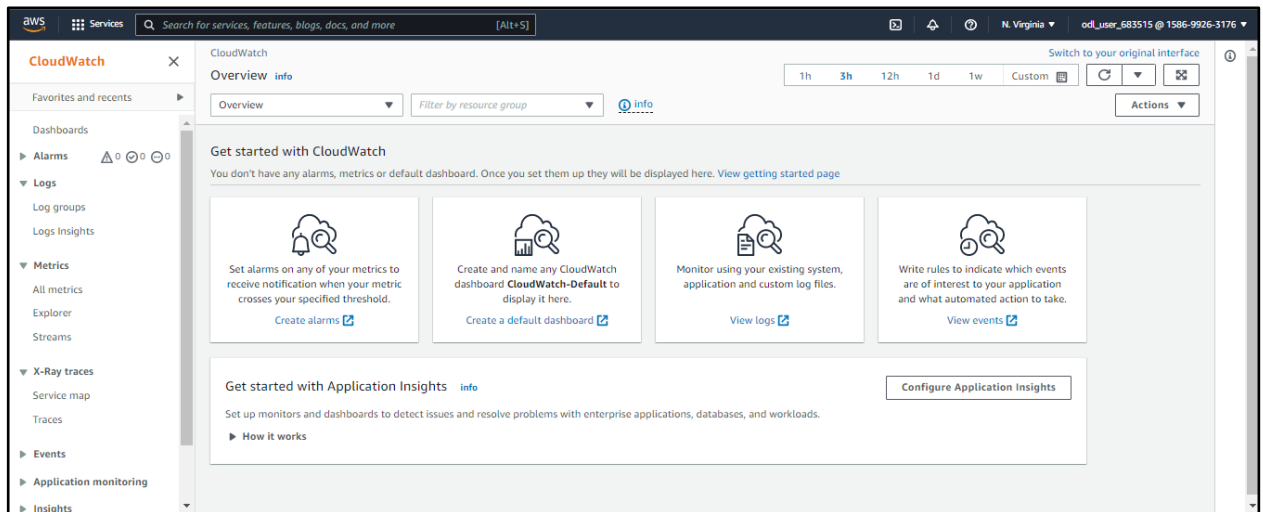
3.2 Connect all the 3 VMs

Step 4: Go to the CloudWatch service

4.1 Right-click on the tab and select the **Duplicate** option:

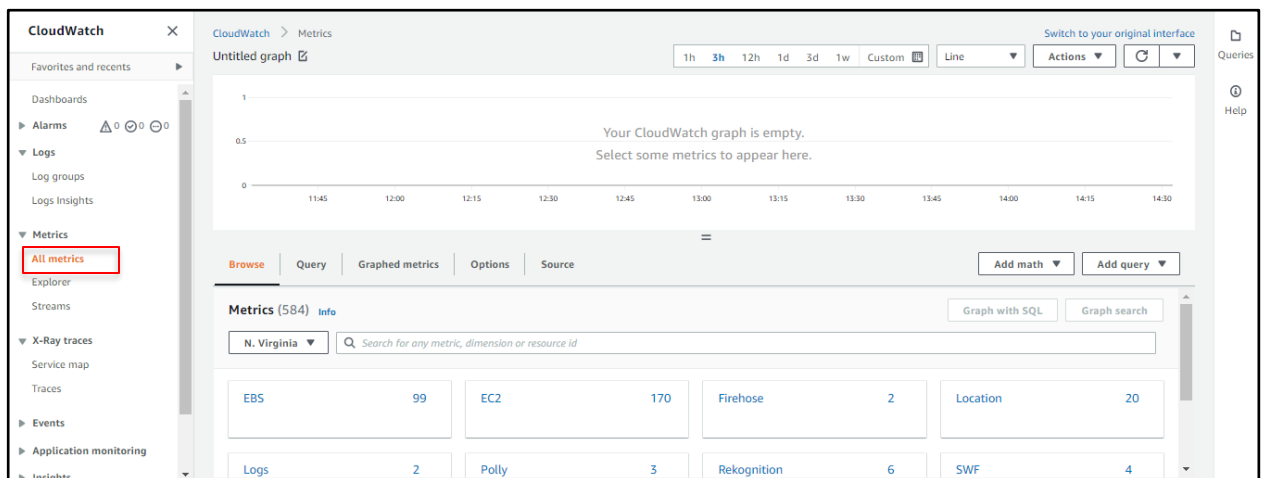


4.2 In the new tab, search **CloudWatch** in the search bar:

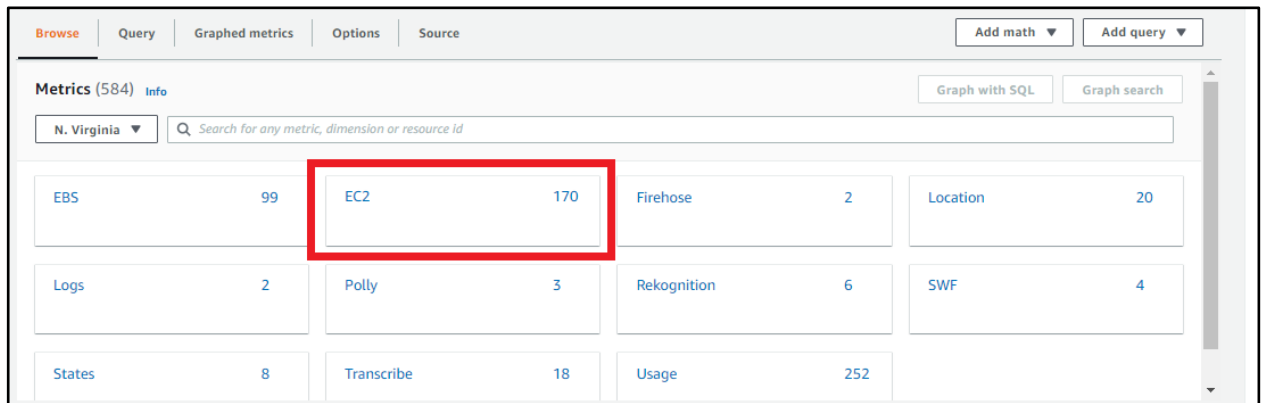


Step 5: Select metrics for CPU utilization for all 3 VMs

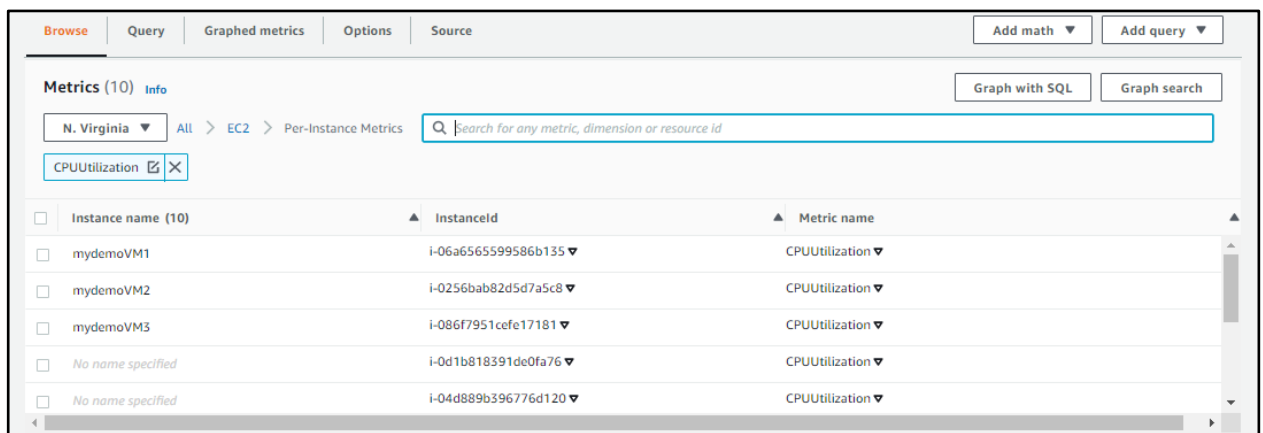
5.1 Click **Metrics** and select **All Metrics** :



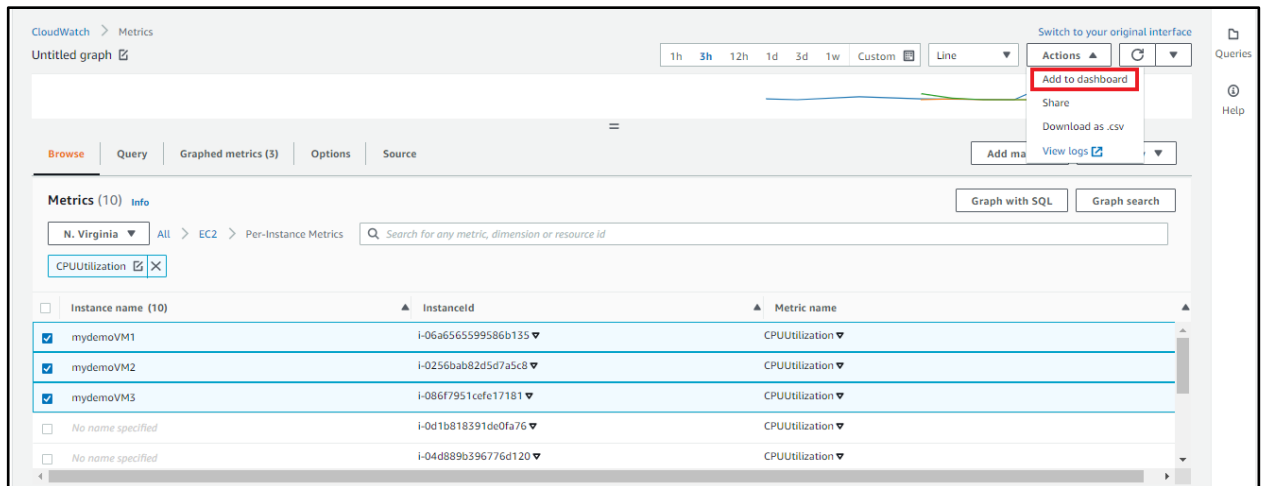
5.2 Select the **EC2** option



5.3 Select **Per-Instance Metrics** and search **CPUUtilization** in the search bar:



5.4 Select all the VMs, and click on **Actions** options, and select **Add to dashboard**:



5.5 Select **Create new**:

The 'Add to dashboard' dialog box is shown. It has a close button (X) in the top right corner. On the left, there are three sections: 'Select a dashboard' with a search bar and a 'Create new' button; 'Widget type' with a dropdown menu set to 'Line'; and 'Customize widget title' with a text field containing 'CPUUtilization'. On the right, there's a 'Preview' section showing a line graph titled 'CPUUtilization' with three data series: 'i-06a6565599586b135 (mydemoVM1)' (blue), 'i-0256bab82d5d7a5c8 (mydemoVM2)' (orange), and 'i-086f7951cefe17181 (mydemoVM3)' (green). The graph shows a peak in CPU utilization around 14:30. At the bottom right, there are 'Cancel' and 'Add to dashboard' buttons.

5.6 Give a name for the dashboard and click on **Create**

5.7 Click on **Add to dashboard** button

Add to dashboard

Select a dashboard
Select an existing dashboard or create a new one.

Create new

Widget type
Select a widget type to add to the dashboard.

Line

Customize widget title
Widgets get an automatic title. You can optionally customize the title here.

Preview
This is how your chart will appear in your dashboard.

CPUUtilization

Percent

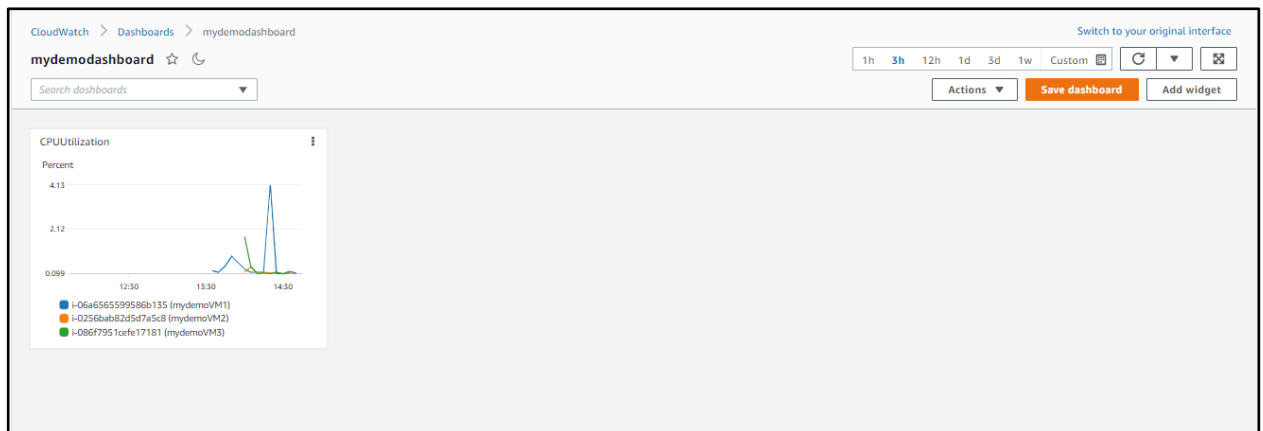
Legend:

- i-06a6565599586b135 (mydemoVM1)
- i-0256bab82d5d7a5c8 (mydemoVM2)
- i-086f7951cefe17181 (mydemoVM3)

Cancel

Add to dashboard

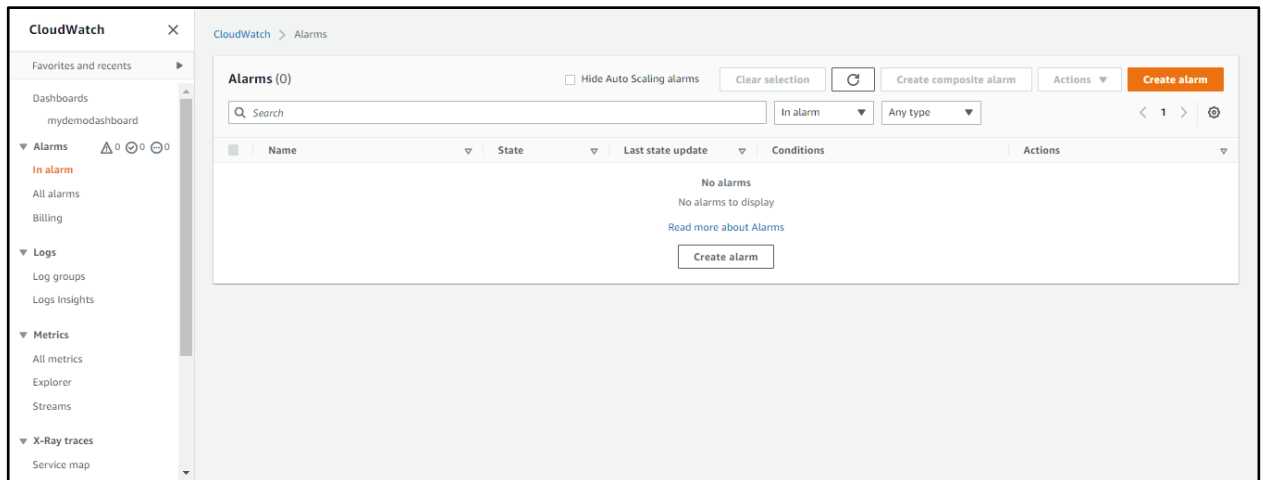
5.8 Click on the **Save dashboard** button:



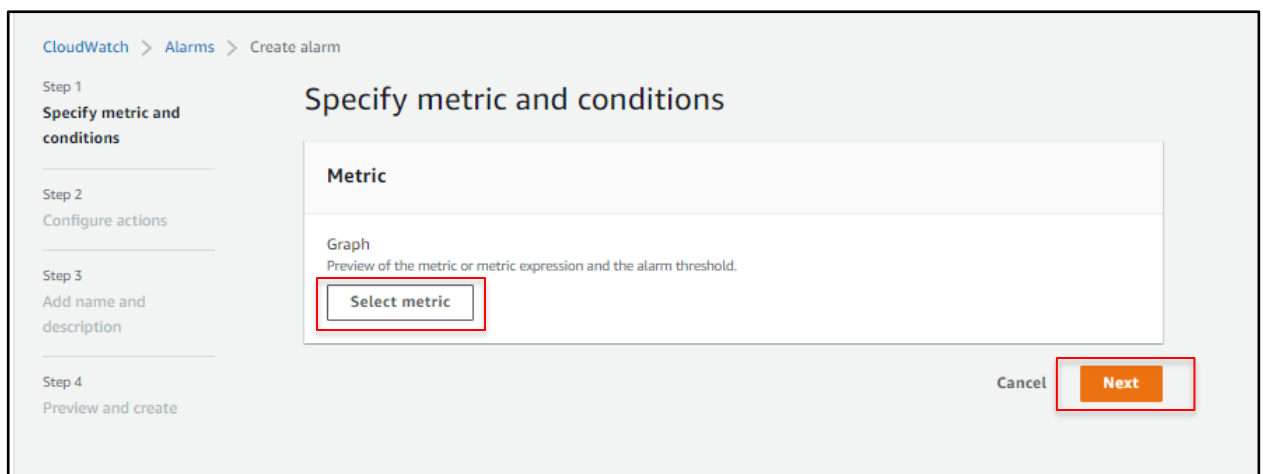
Step 6: Create an alarm

6.1 Click **Alarms** and select **In alarm**

6.2 Click **Create alarm**:

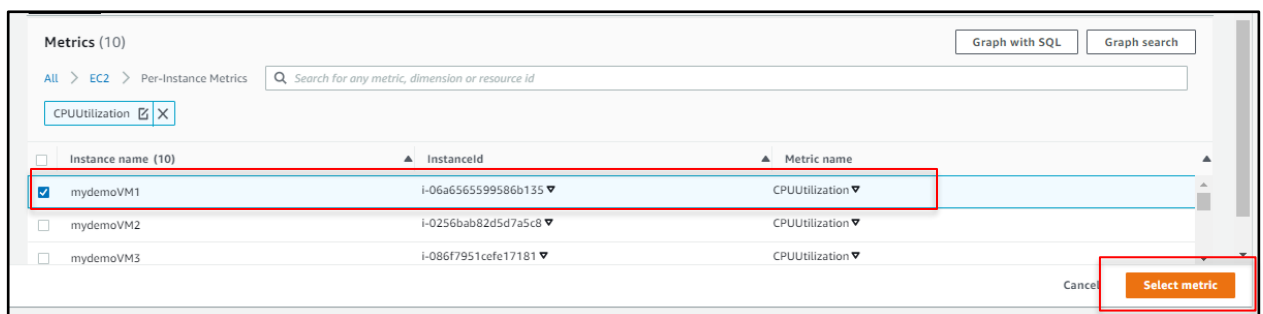


6.3 Click on **Select metric** then click on **Next**:



6.4 Click on **EC2**, select **Per-Instance Metrics**, and search **CPUUtilization** in the search bar

6.5 Select one metric at a time and click on **Select Metric** button:



6.6 Give threshold value as 60 and click on **Next**:

Conditions

Threshold type

☒ Static
Use a value as a threshold

☐ Anomaly detection
Use a band as a threshold

Whenever CPUUtilization is...

Define the alarm condition.

☒ Greater
> threshold

☐ Greater/Equal
>= threshold

☐ Lower/Equal
<= threshold

☐ Lower
< threshold

than...

Define the threshold value.

60

Must be a number

► Additional configuration

Cancel **Next**

6.7 Click on **Create new topic** and add an email address then click on **Create topic**:

Step 1

Specify metric and conditions

Step 2

Configure actions

Step 3

Add name and description

Step 4

Preview and create

Configure actions

Notification

Alarm state trigger
Define the alarm state that will trigger this action.

☒ In alarm
The metric or expression is outside of the defined threshold.
 ☐ OK
The metric or expression is within the defined threshold.
 ☐ Insufficient data
The alarm has just started or not enough data is available.

Remove

Send a notification to the following SNS topic
Define the SNS (Simple Notification Service) topic that will receive the notification.

☐ Select an existing SNS topic
 ☒ Create new topic
 ☐ Use topic ARN to notify other accounts

Create a new topic...

The topic name must be unique

Default_CloudWatch_Alarms_Topic

SNS topic names can contain only alphanumeric characters, hyphens (-) and underscores (_).

Email endpoints that will receive the notification...

Add a comma-separated list of email addresses. Each address will be added as a subscription to the topic above.

malv123@gmail.com

user1@example.com, user2@example.com

Create topic

6.9 Add a Name for alarm and click on Create alarm



The expected result is obtained.