**Knowledge Transfer( Cloud Watch Monitoring )**

**Dated : 02/09/2023**

**\*\*Challenge :\*\***

Hey geeks, today I have another challenge now you have to do monitoring and setting alarm to EC2 instance and set a alarm if the CPU goes above 50% usage….

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**\*\*Task :\*\***

Ticket: Get a solution to monitor EC2 and to give CPU utilization alert…

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**\*\*Solution :\*\***

Hey Guys, I have found out the solution for the challenge we can do it by a service named Cloud-Watch in which we can monitor the CPU of instance and also we are allowed to set alert alarm to it…

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**\*\*Pre-requisites:\*\***

• Have a good knowledge about EC2

• Know the all services of AWS

• Have a good knowledge about IAM

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**\*\*Objective:\*\***

The objective is to Monitor and set alerts to Instance.

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**\*\*Description:\*\***

Amazon Web Services (AWS) offers a robust suite of cloud infrastructure and services that empower organizations to build and manage their applications and resources efficiently. Among the critical components of AWS is the ability to monitor your resources and set up alert alarms to proactively respond to events and issues. This process is essential for ensuring the availability, performance, and security of your AWS resources.

**Monitoring in AWS:**

Monitoring in AWS involves the continuous collection and analysis of metrics and logs from various AWS services, including but not limited to EC2 instances, RDS databases, S3 buckets, and Lambda functions. AWS provides several tools and services to facilitate this process:

**Amazon Cloud Watch :**

Cloud Watch is AWS's native monitoring and observability service. It allows you to collect and store metrics, set up custom dashboards, and create alarms based on thresholds or anomaly detection.

**Cloud Watch Logs:**

This service enables you to centralize, store, and analyze logs from your AWS resources and applications. You can set up log streams, filter and search logs, and create metric filters to trigger alarms based on specific log patterns.

**Setting Alert Alarms in AWS:**

Alerts and alarms are essential for staying informed about the health and performance of your AWS resources. AWS provides various ways to set up alarms and notifications:

**Amazon Cloud Watch Alarms:**

Cloud Watch Alarms allow you to monitor a wide range of metrics and trigger actions when thresholds are breached. You can specify actions such as sending notifications via Amazon SNS (Simple Notification Service), Auto Scaling, or AWS Lambda functions to respond to alarms.

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**\*\*Steps:\*\***

# Firstly login to your AWS account and search EC2 service and follow the steps…

**Step 1( Creating Instance )**

# As you all know how to create instance create a demo instance with Amazon Linux 2

# You can select Amazon Linux 2 from the AMI section…

# Create the instance and stop it for a while…

**Step 2 ( Setting Monitoring Dashboard )**

# After creating instance search for cloud watch service and come at it’s dashboard…

# Now follow the steps…

* After coming to dashboard click on create dashboard
* Give name to dashboard and click create dashboard
* Now a widget dialogue box will open select number form it and click next

# From the widget section you can select any thing as per your choice but in or case we are going to monitor CPU Utilization that’s why we have selected number…

* Next you will see Add metric graph in that select EC2 from the browse section

# In browse section you will more thing like ECS,API,SNS and many other you can select whichever service you want to monitor from here…

* Next click on Per-Instance Metrics

# After click it leave the cloud-watch tab as it is and open you account in another tab and got to your EC2 instance there…

# Next select and copy the instance ID and come back to cloud-watch tab

# Now paste the ID in search bar in metrics section and press enter you will see the name of your instance there…

* Now scroll down and search for CPU Utilization

* After finding select it and click on create widget

# Hence your Monitoring Dashboard has been set-up completed

# It will show how much the instance CPU percentage is there will running…

# You can keep as many as widget on the dashboard as per your need…

**# Now the next step is to set a alert for the instance that it should show if the CPU Percentage is gone above 70%**

**Step 3 ( Setting Alert Alarm )**

# Now at left side you will see Alarms section click on All Alarms and follow the steps…

* After coming to all alarms click on create alarm
* Next click on select metric
* Now again you will see Metrics section in that select EC2
* Next click on Per-Instance Metrics
* Now paste the ID again in search bar in metrics section and press enter you will see the name of your instance there
* Now scroll down and search for CPU Utilization

* After finding select it and click on select metric

# In these steps we are creating alert for a particular service in the instance i.e. CPU Utilization…

# You can create as many alert as you want depending on your choice...

* Next you will see a metrics dialogue in that you will see graph section

* In graph section you will see period click on it and select 1 Minute

# You can select the alert period as per your choice…

# Now scroll down you will Conditions

* Next select static in threshold type
* Now select the logical operator greater than

# As per your need you can give the condition to it…

# In our case we are giving greater than…

* Now in than section give the number 70 and click on next
* Now you will see notifications dialogue box
* Select in alarm from alarm state trigger section
* Next click on create new topic

# If you have any previous SNS topic you can select that also…

# In previous topics we have discuss how to create topics you can refer that…

* Now give the topic name and email for alert notifications
* Next select on create topic

# Now you will get a mail to confirm subscription in your mail id go there and confirm it…

* After confirming click on next
* Give name to alarm and click next
* Now scroll down and click create alarm

**# We have completed both alarm and monitor set-up for CPU Utilization now it’s time to test it…**

**# Before testing come to the Cloud-watch dashboard and leave open**

**Step 4 ( Testing )**

**Note : Open the EC2 instance in other tab and leave the cloud watch dashboard open in another tab…**

# Now come to the EC2 instance and start it…

# After starting the Instance connect it and follow the steps …

* Sudo yum update

# Now in this instance we have nothing to run the cpu so we are going to give manual stress to cpu by installing stress tool…

* sudo amazon-linux-extras install epel –y
* sudo yum install stress –y
* sudo stress --cpu 8 --timeout 400 &

# In the above we have install stress tool and give the cpu stress for about 400 seconds…

# Now go to the cloud watch tab and refresh the dashboard you will some percentage in the CPU Utilization widget…

# if the percentage is below 70 you will not get the notification it has to go above 70…

# So you can again give some stress by following command…

* sudo stress --cpu 8 --timeout 600 &

# If nothing happen you can increase the timeout as slowly…

# Once it goes above you will get a notification in your mail by this way you can be alert what’s going on if the instances…

**Note: After completing the test you have to kill all the stress manually by the following command…**

* sudo killall stress

# In this way you can monitor and set up alerts to get aware what’s the AWS account is doing…

**#### THE END ####**

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**\*\*Explanation:\*\***

Amazon Cloud Watch is a pivotal component of Amazon Web Services (AWS) that empowers users to closely monitor and manage their resources and applications. For Amazon Elastic Compute Cloud (EC2) instances, Cloud Watch serves as a vital tool for ensuring their optimal operation and performance. This monitoring and observability service collects a wide array of metrics from EC2 instances, including CPU utilization, network traffic, and disk I/O, among others, either at default five-minute intervals or through custom metrics. The real power of Cloud Watch lies in its ability to set up alarms, allowing users to proactively respond to specific metric conditions and ensure the reliability and efficiency of their EC2 instances.

Cloud Watch Alarms are the linchpin of this proactive monitoring strategy. They enable users to establish predefined thresholds for their EC2 metrics and take automated actions when these thresholds are crossed or sustained for a designated duration. For example, you can configure an alarm to trigger when an EC2 instance's CPU utilization surpasses 80% for five consecutive minutes. Creating such alarms is straightforward through the AWS Management Console, where you select the relevant EC2 metric, instance, and set the desired threshold and duration parameters. Moreover, you can specify actions to be executed when an alarm triggers, such as sending notifications via Amazon Simple Notification Service (SNS), invoking AWS Lambda functions, or even stopping or terminating the problematic instance.

In practical terms, setting up alarms for EC2 instances ensures that you are always aware of their performance and health. By carefully defining thresholds and actions, you can tailor your monitoring to your specific needs. Whether it's receiving immediate notifications of critical issues or automating responses to adjust your infrastructure, Cloud Watch alarms provide the real-time visibility and control necessary to maintain the reliability and efficiency of your EC2 instances, making them an indispensable tool for managing your AWS environment.