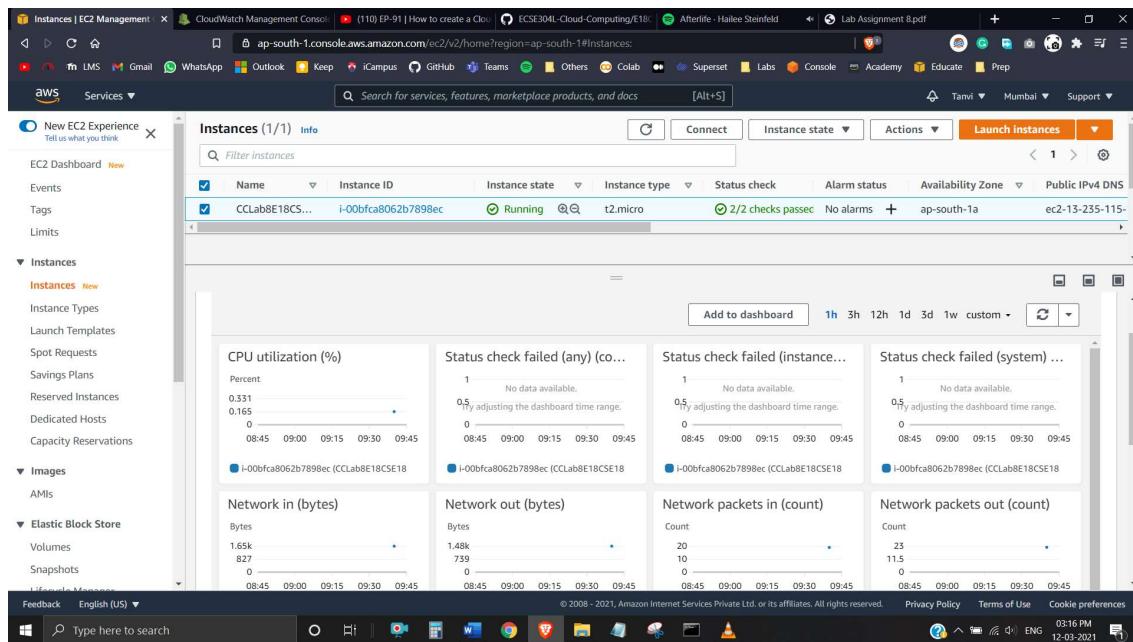


Lab Assignment-8

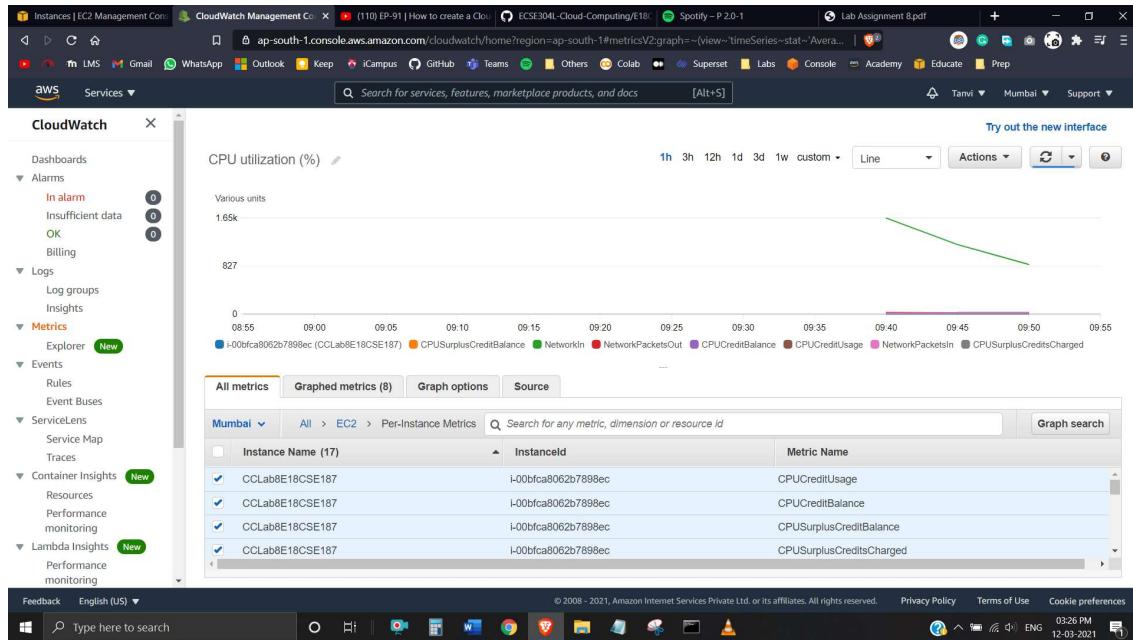
ECSE304L: Cloud Computing

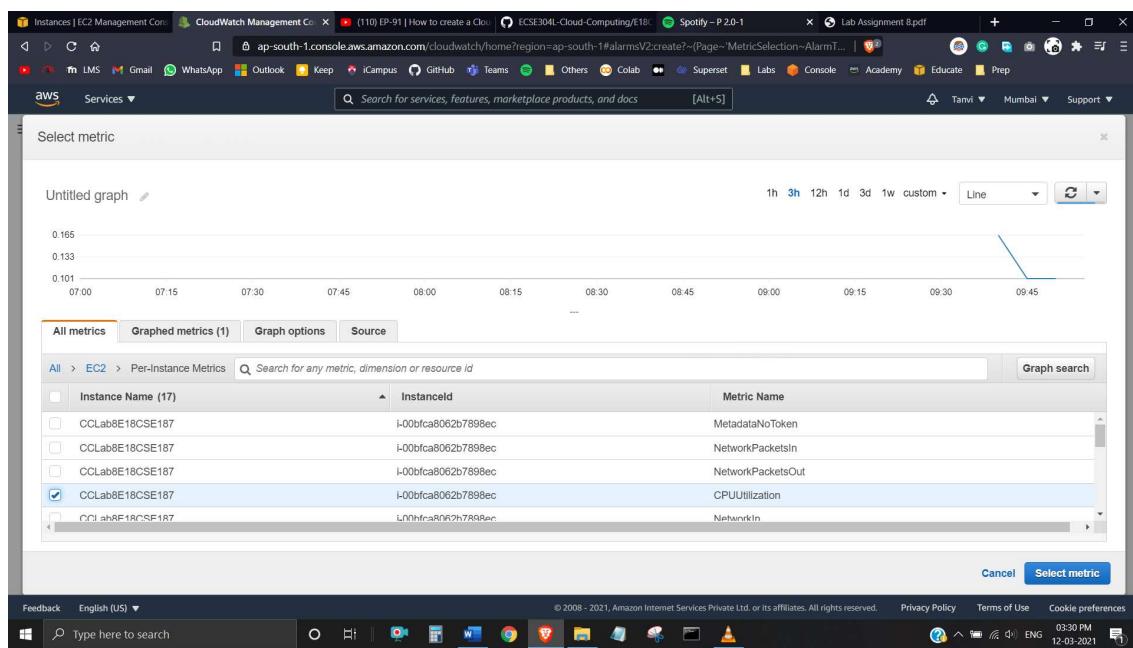
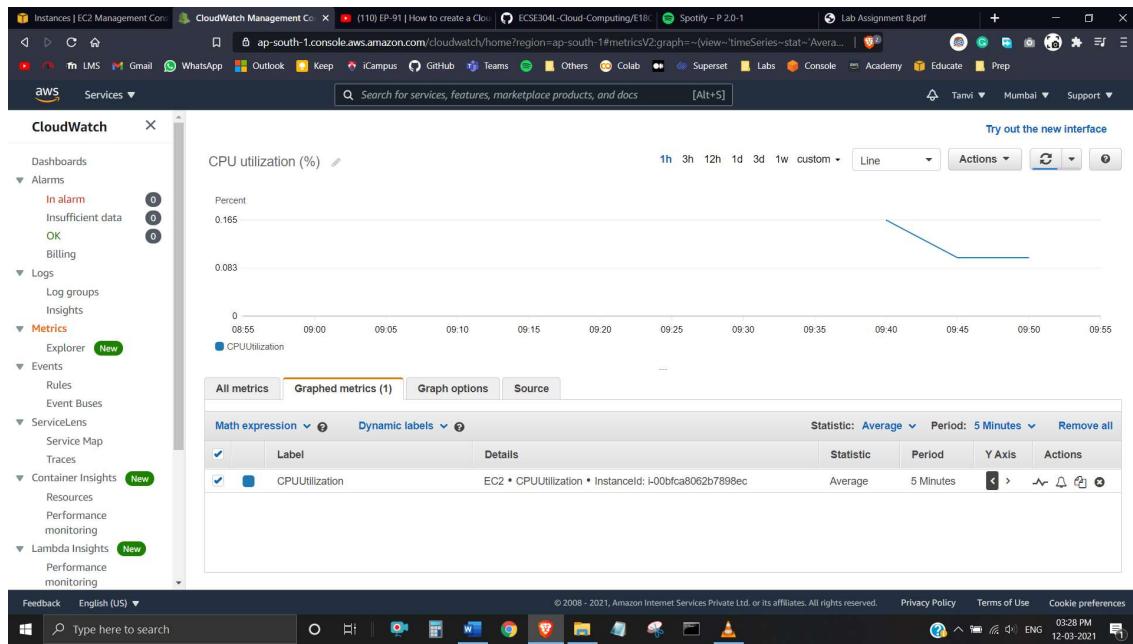
Name: Tanvi Penumudy
Enroll no: E18CSE187
Batch: EB02

Implementation Screenshots (Step-by-Step):



The screenshot shows the AWS EC2 Management Console. On the left, there's a sidebar with links for EC2 Dashboard, Events, Tags, Limits, Instances (selected), Instance Types, Launch Templates, Spot Requests, Savings Plans, Reserved Instances, Dedicated Hosts, Capacity Reservations, Images, AMIs, and Elastic Block Store. The main area shows a table for Instances (1/1) with one row. The instance details are: Name: CCLab8E18CSE18, Instance ID: i-00bfca8062b7898ec, Instance state: Running, Instance type: t2.micro, Status check: 2/2 checks passed, Alarm status: No alarms, Availability Zone: ap-south-1a, Public IPv4 DNS: ec2-13-235-115-155.in. Below the table, there are four cards: CPU utilization (%), Status check failed (any) (co...), Status check failed (instance...), and Status check failed (system) The bottom of the screen shows the AWS navigation bar and the Windows taskbar.





Screenshot of the AWS CloudWatch Management Console showing the 'Specify metric and conditions' step for creating a new alarm.

Metric

This alarm will trigger when the blue line goes above the red line for 1 datapoints within 5 minutes.

Graph

Percent

0.16
0.14
0.12

07:30 08:30 09:30

CPUUtilization

Namespace: AWS/EC2
Metric name: CPUUtilization
InstanceId: i-00bfcfa8062b7898ec
Instance name: CCLab8E18CSE187
Statistic: Average
Period: 5 minutes

Feedback English (US) ▾ **Type here to search** **Privacy Policy** **Terms of Use** **Cookie preferences** 03:30 PM ENG 12-03-2021

Screenshot of the AWS CloudWatch Management Console showing the 'Conditions' step for creating a new alarm.

Period: 1 minute

Conditions

Threshold type: Static (selected)

Use a value 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:
0.6

Must be a number

Additional configuration

Cancel **Next**

Feedback English (US) ▾ **Type here to search** **Privacy Policy** **Terms of Use** **Cookie preferences** 03:32 PM ENG 12-03-2021

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.

Select an 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

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.
tp6145@benmett.edu.in
user1@example.com, user2@example.com

Create topic

AWS Notification - Subscription Confirmation

AN AWS Notifications <no-reply@sns.amazonaws.com>
Fri 3/12/2021 3:34 PM
To: TANVI PENUMUDY

You have chosen to subscribe to the topic:
arn:aws:sns:ap-south-1:634102821134:Default_CloudWatch_Alarms_Topic

To confirm this subscription, click or visit the link below (if this was in error no action is necessary):
[Confirm subscription](#)

Please do not reply directly to this email. If you wish to remove yourself from receiving all future SNS subscription confirmation requests please send an email to [sns-opt-out](#)

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

Simple Notification Service

Subscription confirmed!

You have successfully subscribed.

Your subscription's id is:
arn:aws:sns:ap-south-1:634102821134:Default_CloudWatch_Alarms_Topic:0f8403ad-2bb8-441c-864d-d7e62ed1edf2

If it was not your intention to subscribe, [click here to unsubscribe](#).

Screenshot of the AWS SNS console showing the 'Default_CloudWatch_Alarms_Topic' details page.

Topic Details:

- Name:** Default_CloudWatch_Alarms_Topic
- ARN:** arn:aws:sns:ap-south-1:634102821134:Default_CloudWatch_Alarms_Topic
- Type:** Standard

Subscriptions: 1

ID	Endpoint	Status	Protocol
0f8403ad-2bb8-441c-864d-d7e62ed1edf2	tp6145@bennett.edu.in	Confirmed	EMAIL

Screenshot of the AWS CloudWatch Metrics console showing the 'Create alarm' wizard - Step 3: Add name and description.

Add name and description

Name and description

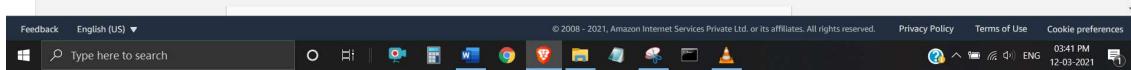
Alarm name: EC2AlarmEmail

Alarm description - optional: Alarm description

Next

Screenshot of the AWS CloudWatch Metrics console showing the 'Preview and create' step for creating a new alarm. The left sidebar shows navigation steps: Step 1 (Specify metric and conditions), Step 2 (Configure actions), Step 3 (Add name and description), and Step 4 (Preview and create). The main panel displays a graph titled 'Metric' showing CPUUtilization over time (07:30 to 09:30). The graph indicates a blue line (CPUUtilization) crossing a red threshold line at approximately 0.15. Configuration details on the right include:

- Graph**: This alarm will trigger when the blue line goes above the red line for 1 datapoints within 1 minute.
- Metric**: Percent (selected), Namespace: AWS/EC2, Metric name: CPUUtilization, InstanceId: i-00fcfa8062b7898ec, Instance name: CCLab8E18C5E187, Statistic: Average, Period: 1 minute.



Screenshot of the AWS CloudWatch Metrics console showing the 'Additional configuration' step for creating a new alarm. The left sidebar shows navigation steps: Step 1 (Specify metric and conditions), Step 2 (Configure actions), Step 3 (Add name and description), and Step 4 (Preview and create). The main panel displays the 'Actions' section under 'Step 2: Configure actions'. It shows a single notification action:

- Notification**: When In alarm, send a notification to "Default_CloudWatch_Alarms_Topic".



Screenshot of the AWS CloudWatch Metrics console showing the successful creation of an alarm named EC2AlarmEmail.

The left sidebar shows the CloudWatch navigation menu with the following sections expanded:

- Alarms (1)
- Logs
- Metrics
- Events
- ServiceLens
- Container Insights
- Lambda Insights

The main content area displays the Alarms list with one item:

Name	State	Last state update	Conditions	Actions
EC2AlarmEmail	Insufficient data	2021-03-12 15:42:36	CPUUtilization > 0.6 for 1 datapoints within 1 minute	1 action(s)

At the bottom, there is a search bar and a toolbar with various icons.

Screenshot of the AWS CloudWatch Metrics console showing the process of adding the EC2AlarmEmail alarm to a dashboard.

The left sidebar shows the CloudWatch navigation menu with the following sections expanded:

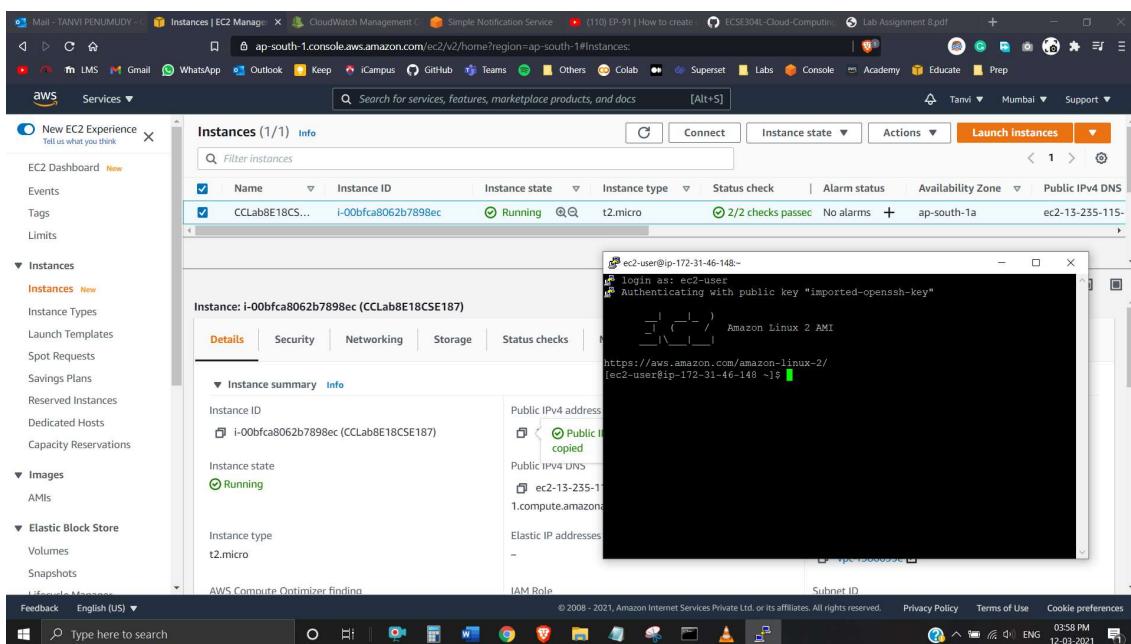
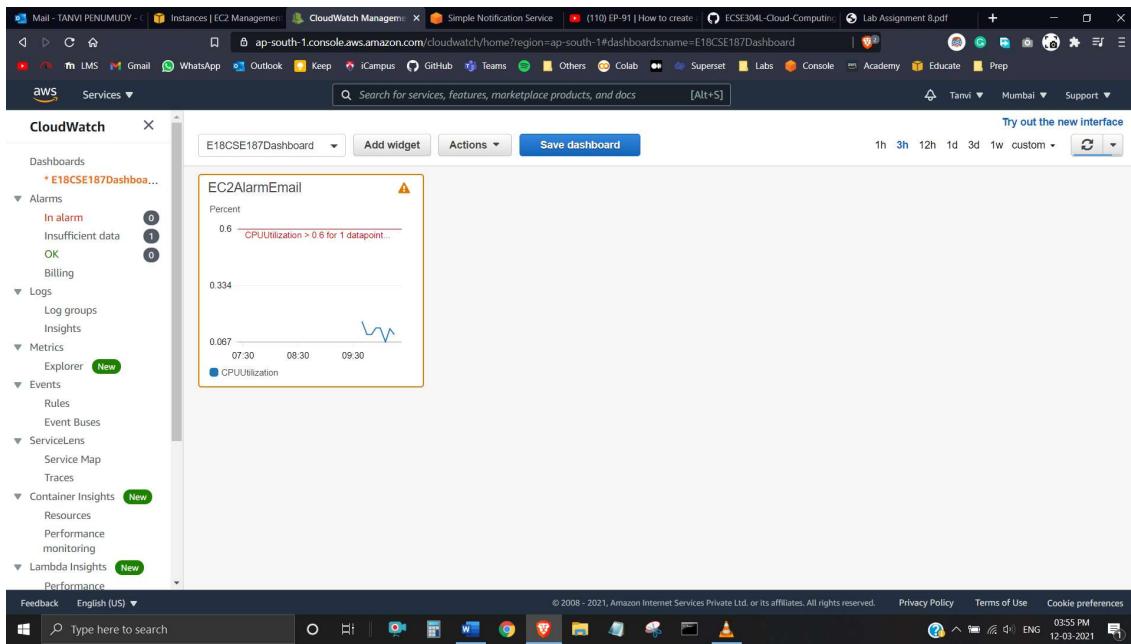
- Alarms (1)
- Logs
- Metrics
- Events
- ServiceLens
- Container Insights
- Lambda Insights

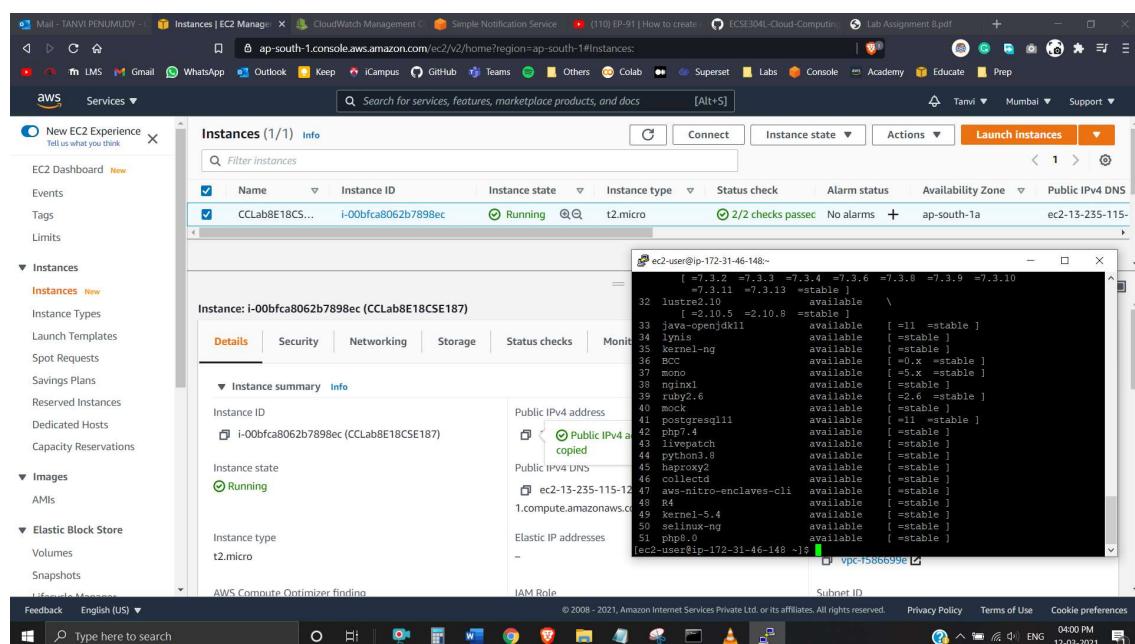
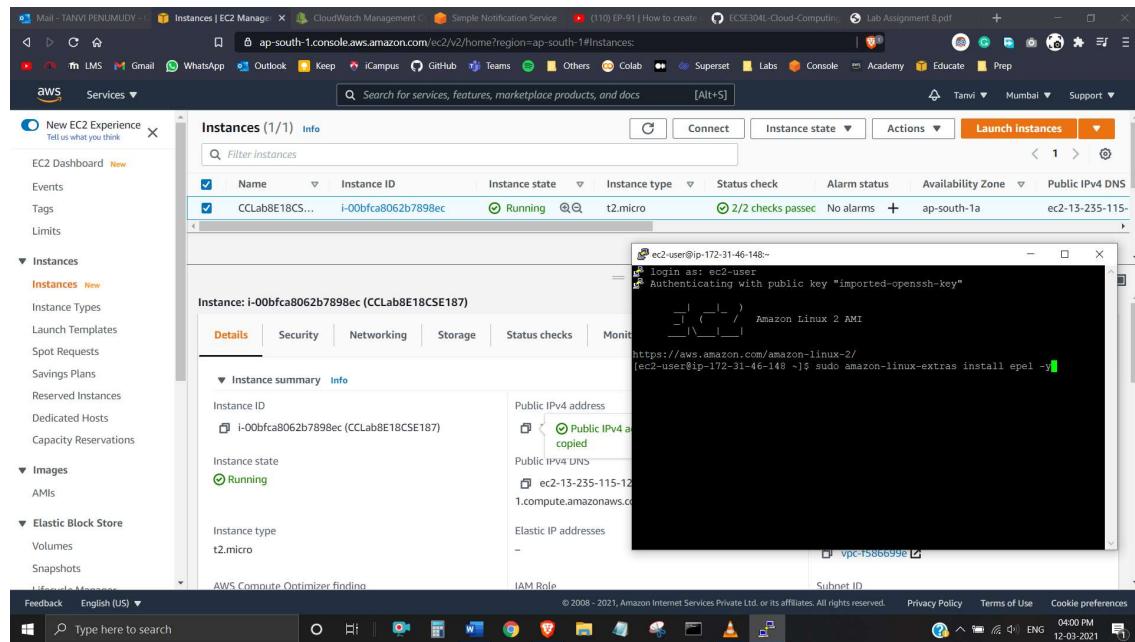
The main content area shows the "Add to dashboard" dialog:

- 1. Select a dashboard**: A dropdown menu shows "E18CSE187Dashboard" selected, with a "Create new" button.
- 2. Select a widget type**: Options include "Line", "Stacked area", "Number", and "Alarm status".
- 3. Customize the widget title**: A text input field contains "EC2AlarmEmail".

The "Preview" section shows a line chart for CPUUtilization over time, with a red horizontal line at 0.6 indicating the alarm threshold. The chart includes a legend for "CPUUtilization" and a note about "Insufficient data".

At the bottom right of the dialog are "Cancel" and "Add to dashboard" buttons.





Mail - TANVI PENUMUDY - Instances | EC2 Manager | CloudWatch Management | Simple Notification Service | (110) EP-91 | How to create | ECSE304L-Cloud-Computing | Lab Assignment 8.pdf

Instances (1/1) Info

Search for services, features, marketplace products, and docs [Alt+S]

New EC2 Experience Tell us what you think

EC2 Dashboard Events Tags Limits Instances Instances New Instance Types Launch Templates Spot Requests Savings Plans Reserved Instances Dedicated Hosts Capacity Reservations Images AMIs Elastic Block Store Volumes Snapshots Feedback English (US)

Type here to search

Instances (1/1) Info

Filter instances

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS
CCLab8E18CS...	i-00bfca8062b7898ec	Running	t2.micro	2/2 checks passed	No alarms	ap-south-1a	ec2-13-235-115-

Instance: i-00bfca8062b7898ec (CCLab8E18CSE187)

Details Security Networking Storage Status checks Monitor

Instance summary Info

Instance ID: i-00bfca8062b7898ec (CCLab8E18CSE187)

Public IPv4 address: ec2-13-235-115-1.compute.amazonaws.com

Instance state: Running

Instance type: t2.micro

Elastic IP addresses: -

IAM Role: Subnet ID: vpc-f586699e

ec2-user@ip-172-31-46-148:~

```
[ =7.3.2 =7.3.3 =7.3.4 =7.3.6 =7.3.8 =7.3.9 =7.3.10
  =7.3.11 =7.3.13 =stable ]
  =2.10.5 =2.10.8 =stable ]
  =3.2 lustre2 available
  =3.3 java-openjdk11 available
  =3.4 lynx available
  =3.5 kernel-nginx available
  =3.7 mongo available
  =3.8 nginx available
  =3.9 ruby2.6 available
  =4.0 mock available
  =4.1 postgresql available
  =4.2 php7.4 available
  =4.3 memcached available
  =4.4 python3.8 available
  =4.5 haproxy2 available
  =4.6 collectd available
  =4.7 aws-nitro-enclaves-cli available
  =4.8 R4 available
  =4.9 selinux-3.4 available
  =5.0 selinux-ng available
  =5.1 php8.0 available
[ ec2-user@ip-172-31-46-148 ~ ]$ sudo yum install stress
```

vpc-f586699e

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Instances (1/1) Info

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Type here to search

Instances (1/1) Info

Filter instances

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS
CCLab8E18CS...	i-00bfca8062b7898ec	Running	t2.micro	2/2 checks passed	No alarms	ap-south-1a	ec2-13-235-115-

Instance: i-00bfca8062b7898ec (CCLab8E18CSE187)

Details Security Networking Storage Status checks Monitor

Instance summary Info

Instance ID: i-00bfca8062b7898ec (CCLab8E18CSE187)

Public IPv4 address: ec2-13-235-115-1.compute.amazonaws.com

Instance state: Running

Instance type: t2.micro

Elastic IP addresses: -

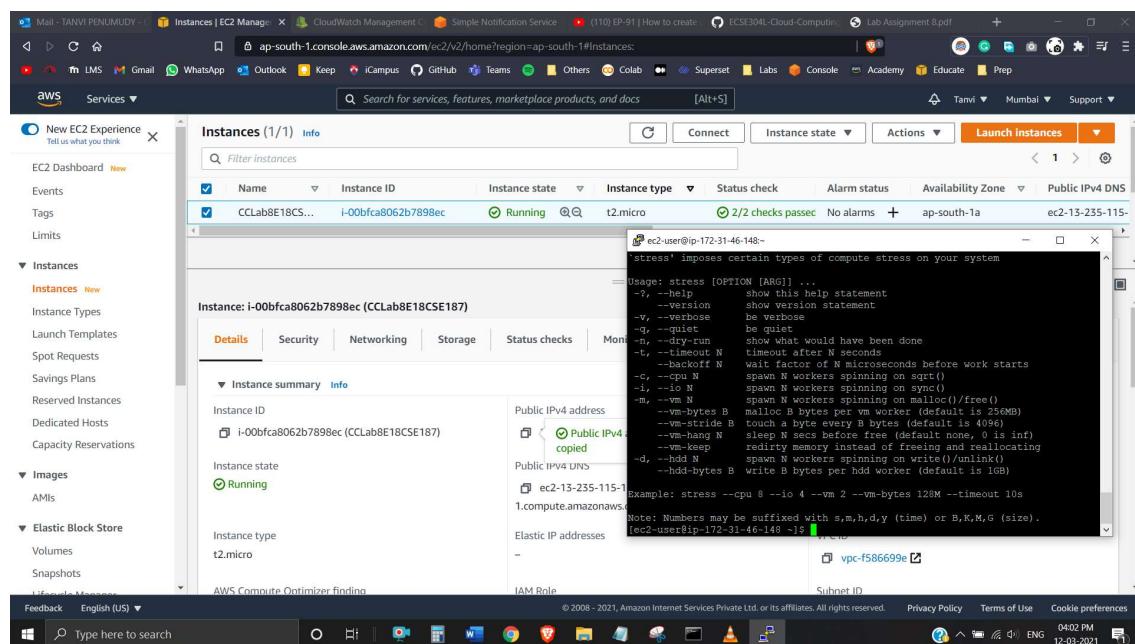
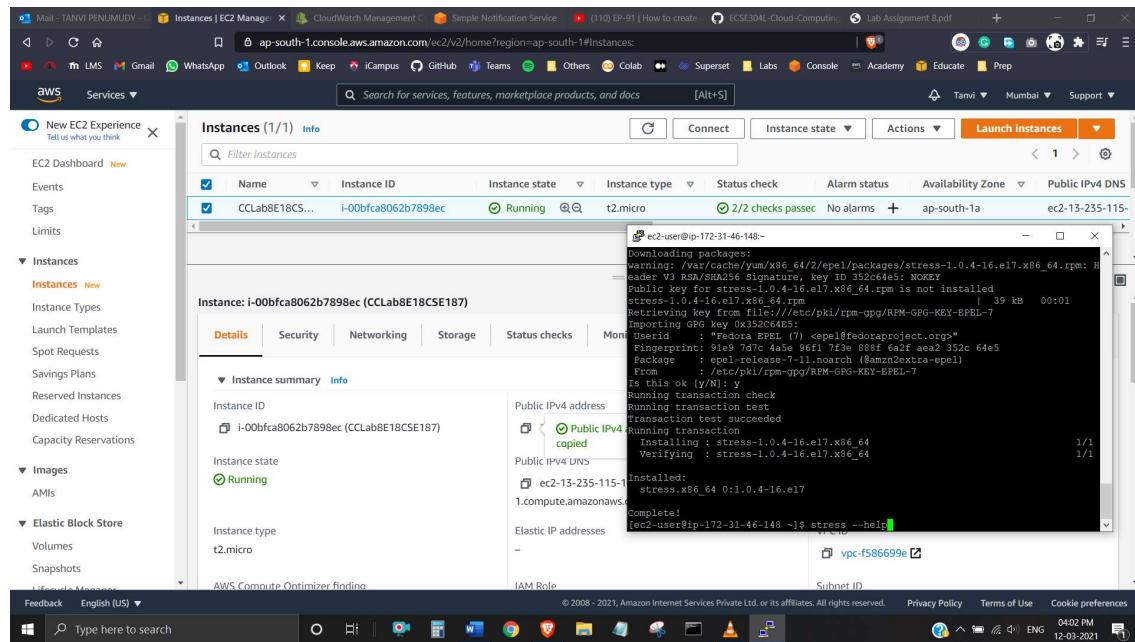
IAM Role: Subnet ID: vpc-f586699e

ec2-user@ip-172-31-46-148:~

```
downloading packages:
warning: /var/cache/yum/x86_64/2/epel/packages/stress-1.0.4-16.el7.x86_64.rpm: Header V3 RSA/SHA256 Signature, key ID 352c64e5: NOKEY
Public key for stress-1.0.4-16.el7.x86_64.rpm is not installed
stress-1.0.4-16.el7.x86_64.rpm
Retrieving key from file:///etc/pki/rpm-gpg/RPM-GPG-KEY-EPEL-7
reporting key 0x352c64e5
Fingerprint: 91e9 7d7c a5e 96f1 73d 088f 6a2f ae2 352c 64e5
Package : epel-release-7-11.noarch (amazon-2extra-epe1)
From   : /etc/pki/rpm-gpg/RPM-GPG-KEY-EPEL-7
File   : /etc/pki/rpm-gpg/RPM-GPG-KEY-EPEL-7
Running transaction check
Running transaction test
Transaction test succeeded
Running transaction
Installing : stress-1.0.4-16.el7.x86_64
Verifying : stress-1.0.4-16.el7.x86_64
1/1
1/1
Installed:
  stress.x86_64 0:1.0.4-16.el7
Complete!
[ ec2-user@ip-172-31-46-148 ~ ]$
```

vpc-f586699e

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Screenshot of the AWS EC2 Management Console showing the Instances (1/1) page. A terminal window is open on the instance, displaying the stress command usage and options.

```

Usage: stress [OPTION] ...
    -?, --help      show this help statement
    --version      show version statement
    -v, --verbose   be verbose
    -q, --quiet     be quiet
    -n, --dry-run   show what would have been done
    -t, --timeout N timeout after N seconds
    -c, --backoff N wait factor of N microseconds before work starts
    -i, --io N      spawn N workers spinning on sqrt()
    -m, --vm N      spawn N workers spinning on malloc() /free()
    -v, --vm-bytes B malloc B bytes per vm worker (default is 256MB)
    -vn, --vm-stride B touch a byte every B bytes (default is 4096)
    -vh, --vm-hang N sleep N secs before free (default none, 0 is inf)
    -vkeep, --vm-keep redirty memory instead of freeing and reallocating
    -d, --hdd N     spawn N workers spinning on write() /unlink()
    -hb, --hdd-bytes B write B bytes per hdd worker (default is 1GB)

Example: stress --cpu 8 --io 4 --vm 2 --vm-bytes 128M --timeout 10s
Note: Numbers may be suffixed with s,m,h,d,y (time) or B,K,M,G (size).
(ec2-user@ip-172-31-46-148: ~) $ stress --cpu 4 --timeout 180
stress: info: [32367] dispatching hogs: 4 cpu, 0 io, 0 vm, 0 hdd

```

Screenshot of the AWS CloudWatch Metrics Dashboard titled "E18CSE187Dashboard". A terminal window is open on the instance, displaying the stress command usage and options.

```

Usage: stress [OPTION] ...
    -?, --help      show this help statement
    --version      show version statement
    -v, --verbose   be verbose
    -q, --quiet     be quiet
    -n, --dry-run   show what would have been done
    -t, --timeout N timeout after N seconds
    -c, --backoff N wait factor of N microseconds before work starts
    -i, --io N      spawn N workers spinning on sqrt()
    -m, --vm N      spawn N workers spinning on malloc() /free()
    -v, --vm-bytes B malloc B bytes per vm worker (default is 256MB)
    -vn, --vm-stride B touch a byte every B bytes (default is 4096)
    -vh, --vm-hang N sleep N secs before free (default none, 0 is inf)
    -vkeep, --vm-keep redirty memory instead of freeing and reallocating
    -d, --hdd N     spawn N workers spinning on write() /unlink()
    -hb, --hdd-bytes B write B bytes per hdd worker (default is 1GB)

Example: stress --cpu 8 --io 4 --vm 2 --vm-bytes 128M --timeout 10s
Note: Numbers may be suffixed with s,m,h,d,y (time) or B,K,M,G (size).
(ec2-user@ip-172-31-46-148: ~) $ stress --cpu 4 --timeout 180
stress: info: [32367] dispatching hogs: 4 cpu, 0 io, 0 vm, 0 hdd

```



CloudWatch > Alarms > EC2AlarmEmail

Graph

CPUUtilization

Percent

Time	Value
07:45	0.067
08:00	0.067
08:15	0.067
08:30	0.067
08:45	0.067
09:00	0.067
09:15	0.067
09:30	0.067
09:45	0.067
10:00	0.067
10:15	0.067
10:30	4.03

Details

Name	State	Namespace	Datapoints to alarm
EC2AlarmEmail	Insufficient data		

The screenshot shows the AWS CloudWatch Metrics console. On the left, the navigation pane is open with the 'Alarms' section selected. Under 'In alarm', there is one entry: 'EC2AlarmEmail' with 'Insufficient data'. The main panel displays the 'EC2AlarmEmail' alarm details. Below that is the 'History' section, which lists eight entries from March 12, 2021. The first entry is 'EC2AlarmEmail Metric alarm Insufficient data'. The subsequent seven entries are all 'State update' events, indicating transitions between 'OK' and 'Insufficient data' states.

Date	Type	Description
2021-03-12 10:32:49	State update	Alarm updated from In alarm to Insufficient data
2021-03-12 10:30:49	Action	Successfully executed action arn:aws:sns:ap-south-1:634102821134:Default_CloudWatch_Alarms_Topic
2021-03-12 10:30:49	State update	Alarm updated from Insufficient data to In alarm
2021-03-12 10:27:49	State update	Alarm updated from OK to Insufficient data
2021-03-12 10:25:49	State update	Alarm updated from Insufficient data to OK
2021-03-12 10:22:49	State update	Alarm updated from OK to Insufficient data
2021-03-12 10:20:49	State update	Alarm updated from Insufficient data to OK
2021-03-12 10:17:49	State update	Alarm updated from OK to Insufficient data

ALARM: "EC2AlarmEmail" in Asia Pacific (Mumbai)

AN AWS Notifications <no-reply@sns.amazonaws.com>
Fri 3/12/2021 4:05 PM
To: TANVI PENUMUDI

You are receiving this email because your Amazon CloudWatch Alarm "EC2AlarmEmail" in the Asia Pacific (Mumbai) region has entered the ALARM state, because "Threshold Crossed: 1 out of the last 1 datapoints [42.47042697045477 (12/03/21 10:30:00)] was greater than the threshold (0.6) (minimum 1 datapoint for OK -> ALARM transition)." at "Friday 12 March, 2021 10:35:49 UTC".

View this alarm in the AWS Management Console:
<https://ind01.safelinks.protection.outlook.com/?url=https%3A%2F%2Fcloudwatch%2Fhome%3Fregion%3Dap-south-1%26alarm%3DalarmEmail&data=04%7C01%7Ctp6145%40bennett.edu.in%7Cce05b093efc1431b001408d8e5429c34%7C2c5bdaf48ff24bd9bd547c50ab219590%7C0%7C0%7C637511421540579307%7CUnknown%7CTWFpbGZsb3d8eyJWljoiMC4wljAwMDAiLCQljojV2luMzhiLCBTiI6lk1haWwiCJXVCi6Mn0%3D%7C1000&data=jlaFIS4Dt76ao%2BTVM2oKzyCu5lWIBscax%2FEfA58InU%3D&reserved=0>

Alarm Details:

- Name: EC2AlarmEmail
- Description: INSUFFICIENT_DATA -> ALARM
- State Change: Threshold Crossed: 1 out of the last 1 datapoints [42.47042697045477 (12/03/21 10:30:00)] was greater than the threshold (0.6) (minimum 1 datapoint for OK -> ALARM transition).
- Timestamp: Friday 12 March, 2021 10:35:49 UTC
- AWS Account: 634102821134
- Alarm Arn: arn:aws:cloudwatch:ap-south-1:634102821134:alarm:EC2AlarmEmail

Threshold:

- The alarm is in the ALARM state when the metric is GreaterThanThreshold 0.6 for 60 seconds.

