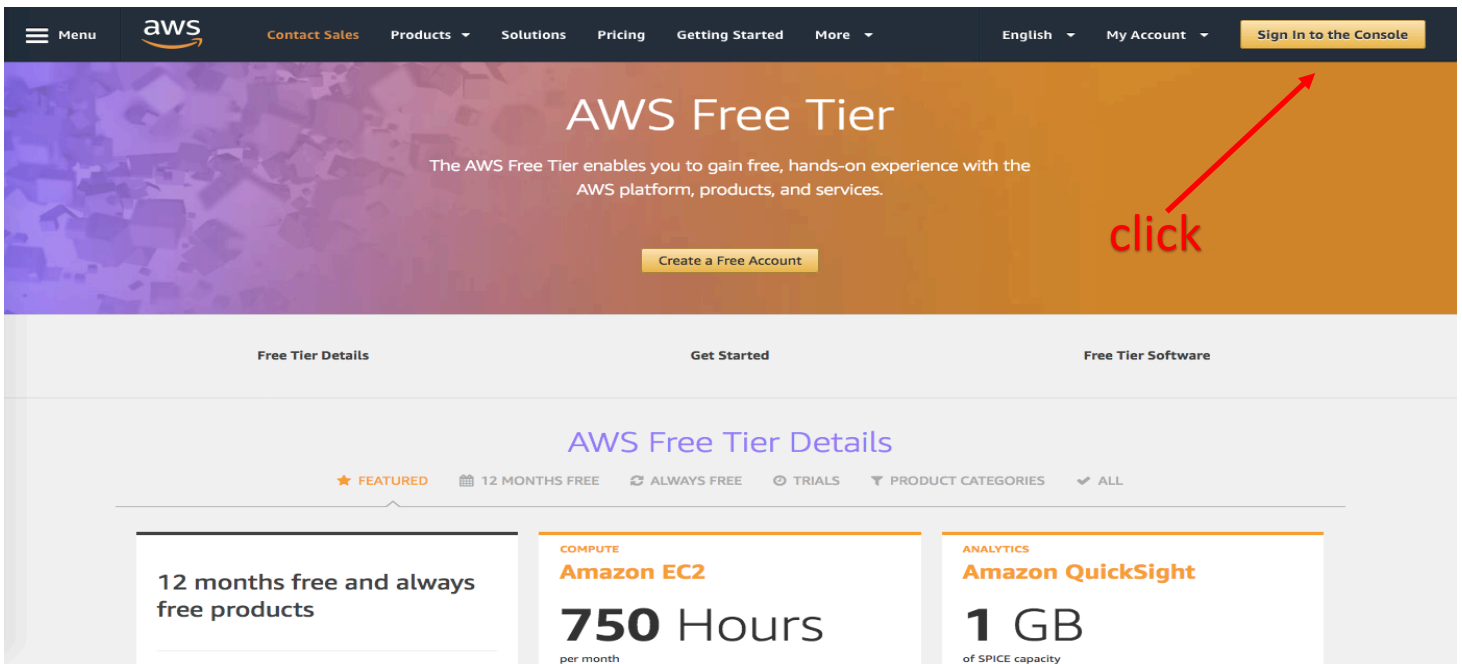


CMPE 281 Cloud Technologies

Lab 1 Assignment Report

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Step1: Create a AWS free account.



Menu **aws** [Contact Sales](#) [Products](#) [Solutions](#) [Pricing](#) [Getting Started](#) [More](#) [English](#) [My Account](#) [Sign In to the Console](#)

AWS Free Tier

The AWS Free Tier enables you to gain free, hands-on experience with the AWS platform, products, and services.

[Create a Free Account](#)

click

Free Tier Details Get Started Free Tier Software

AWS Free Tier Details

★ FEATURED 12 MONTHS FREE ALWAYS FREE TRIALS PRODUCT CATEGORIES ALL

12 months free and always free products

COMPUTE

Amazon EC2

750 Hours

per month

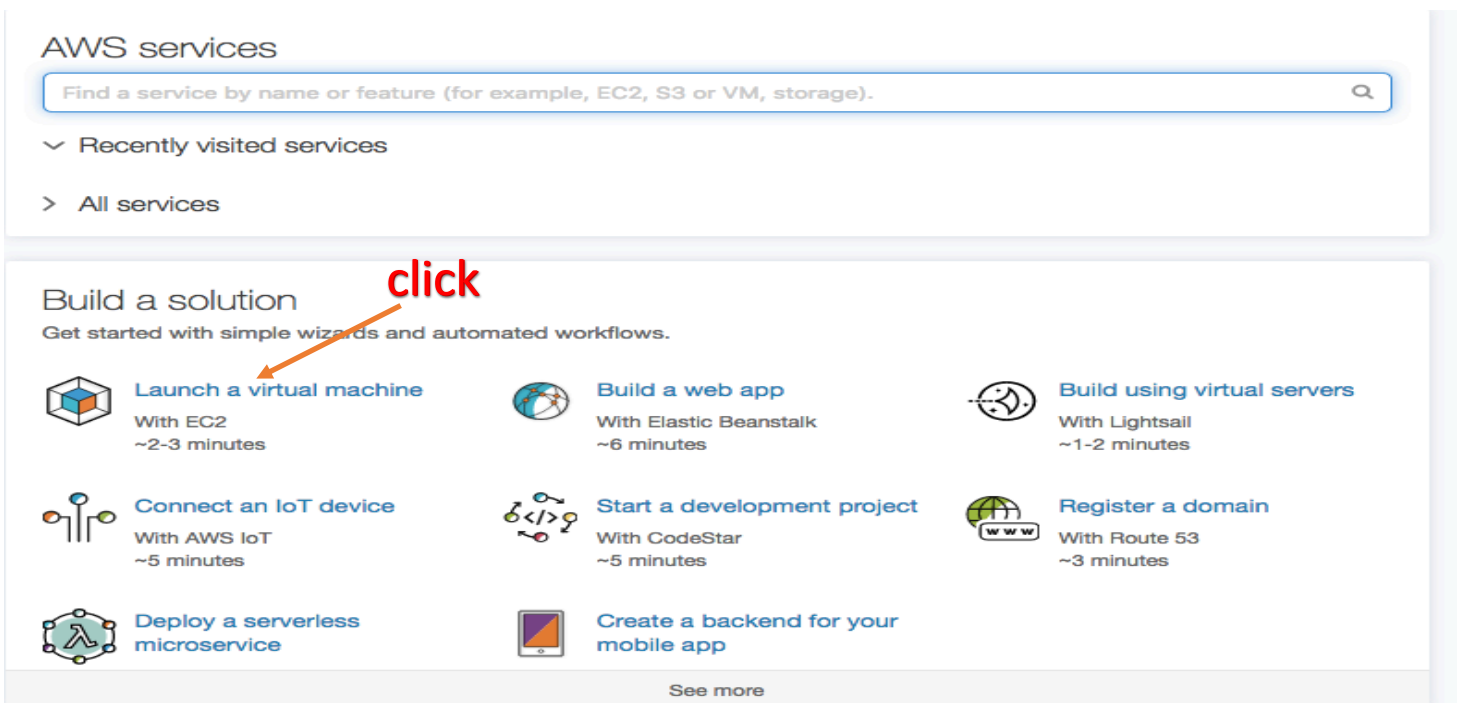
ANALYTICS

Amazon QuickSight

1 GB

of SPIKE capacity

Step2: sign in to AWS console.



AWS services

Find a service by name or feature (for example, EC2, S3 or VM, storage).

Recently visited services

All services

Build a solution

Get started with simple wizards and automated workflows.

click

Launch a virtual machine
With EC2
~2-3 minutes

Build a web app
With Elastic Beanstalk
~6 minutes

Build using virtual servers
With Lightsail
~1-2 minutes

Connect an IoT device
With AWS IoT
~5 minutes

Start a development project
With CodeStar
~5 minutes

Register a domain
With Route 53
~3 minutes

Deploy a serverless microservice

Create a backend for your mobile app

[See more](#)

Step3: Click on “Launch a Virtual Machine”.

Step4: Choose a VM image.

➔ Select Ubuntu Server 16.04 LTS.

Step 1: Choose an Amazon Machine Image (AMI)

Quick Start Cancel and Exit


1 to 35 of 35 AMIs

My AMIs

AWS Marketplace

Community AMIs


☐ Free tier only ⓘ

**Amazon Linux**
Free tier eligible

Amazon Linux 2 AMI (HVM), SSD Volume Type - ami-0cf31d971a3ca20d6

Amazon Linux 2 comes with five years support. It provides Linux kernel 4.14 tuned for optimal performance on Amazon EC2, systemd 219, GCC 7.3, Glibc 2.26, Binutils 2.29.1, and the latest software packages through extras.


Root device type: ebs Virtualization type: hvm

**Amazon Linux**
Free tier eligible

Amazon Linux AMI 2018.03.0 (HVM), SSD Volume Type - ami-0b59bfac6be064b78

The Amazon Linux AMI is an EBS-backed, AWS-supported image. The default image includes AWS command line tools, Python, Ruby, Perl, and Java. The repositories include Docker, PHP, MySQL, PostgreSQL, and other packages.


Root device type: ebs Virtualization type: hvm

**Red Hat**
Free tier eligible

Red Hat Enterprise Linux 7.5 (HVM), SSD Volume Type - ami-03291866

Red Hat Enterprise Linux version 7.5 (HVM), EBS General Purpose (SSD) Volume Type


Root device type: ebs Virtualization type: hvm

**SUSE Linux**
Free tier eligible

SUSE Linux Enterprise Server 15 (HVM), SSD Volume Type - ami-0eb9f58db22854f8f

SUSE Linux Enterprise Server 15 (HVM), EBS General Purpose (SSD) Volume Type. Public Cloud, Advanced Systems Management, Web and Scripting, and Legacy modules enabled.

Root device type: ebs Virtualization type: hvm

**Ubuntu**
Free tier eligible

Ubuntu Server 16.04 LTS (HVM), SSD Volume Type - ami-0552e3455b9bc8d50

Ubuntu Server 16.04 LTS (HVM),EBS General Purpose (SSD) Volume Type. Support available from Canonical (<http://www.ubuntu.com/cloud/services>).

Select

64-bit

Select

64-bit

Select

64-bit

Select

64-bit

Select

64-bit

click ➔

Step5: Choose an Instance type.

➔ Select General Purpose. Allocates 1 CPU 1 GB RAM

Step 2: Choose an Instance Type

Amazon EC2 provides a wide selection of instance types optimized to fit different use cases. Instances are virtual servers that can run applications. They have varying combinations of CPU, memory, storage, and networking capacity, and give you the flexibility to choose the appropriate mix of resources for your applications. [Learn more](#) about instance types and how they can meet your computing needs.

Filter by: All instance types Current generation Show/Hide Columns

Currently selected: t2.micro (Variable ECUs, 1 vCPUs, 2.5 GHz, Intel Xeon Family, 1 GiB memory, EBS only)

	Family	Type	vCPUs ⓘ	Memory (GiB)	Instance Storage (GB) ⓘ	EBS-Optimized Available ⓘ	Network Performance ⓘ	IPv6 Support ⓘ
<input type="checkbox"/>	General purpose	t2.nano	1	0.5	EBS only	-	Low to Moderate	Yes
<input checked="" type="checkbox"/>	General purpose	t2.micro Free tier eligible	1	1	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	General purpose	t2.small	1	2	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	General purpose	t2.medium	2	4	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	General purpose	t2.large	2	8	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	General purpose	t2.xlarge	4	16	EBS only	-	Moderate	Yes
<input type="checkbox"/>	General purpose	t2.2xlarge	8	32	EBS only	-	Moderate	Yes
<input type="checkbox"/>	General purpose	t3.nano	2	0.5	EBS only	Yes	Up to 5 Gigabit	Yes

click ➔

Cancel Previous Review and Launch Next: Configure Instance Details

Step6: Click Review for Launch as shown above.

Step 7: Details about the instance will be shown, verify the details and click launch.

Step 7: Review Instance Launch

AMI Details [Edit AMI](#)

Ubuntu Server 16.04 LTS (HVM), SSD Volume Type - ami-0552e3455b9bc8d50

Free tier eligible

Root Device Type: ebs Virtualization type: hvm

Instance Type [Edit instance type](#)

Instance Type	ECUs	vCPUs	Memory (GiB)	Instance Storage (GB)	EBS-Optimized Available	Network Performance
t2.micro	Variable	1	1	EBS only	-	Low to Moderate

Security Groups [Edit security groups](#)

Security group name: launch-wizard-1
Description: launch-wizard-1 created 2018-09-11T13:48:17.345-07:00

Type	Protocol	Port Range	Source	Description
This security group has no rules				

Instance Details [Edit instance details](#)

Number of instances: 1 Purchasing option: On demand

Network: vpc-2385af4b
Subnet: No preference (default subnet in any Availability Zone)
EBS-optimized: No
Monitoring: No
Termination protection: No
Shutdown behavior: Stop
IAM role: None
Tenancy: Shared - Run a shared hardware instance
T2/T3 Unlimited: Disabled
Host ID: Off
Affinity: Off
Kernel ID: Use default
RAM disk ID: Use default

[Cancel](#) [Previous](#) [Launch](#)

click

Step8: Select a key pair to approve for remote SSH connection.

- Create a new key pair and give a name to it.
- Download the key pair which will be useful for instantiating connection.

Select an existing key pair or create a new key pair

A key pair consists of a **public key** that AWS stores, and a **private key file** that you store. Together, they allow you to connect to your instance securely. For Windows AMIs, the private key file is required to obtain the password used to log into your instance. For Linux AMIs, the private key file allows you to securely SSH into your instance.

Note: The selected key pair will be added to the set of keys authorized for this instance. [Learn more about removing existing key pairs from a public AMI.](#)

Create a new key pair

Key pair name

press_laws

Download Key Pair

You have to download the **private key file** (*.pem file) before you can continue. **Store it in a secure and accessible location.** You will not be able to download the file again after it's created.

[Cancel](#) [Launch Instances](#)

click

Step 9: we will be redirected to a page which shows some status information.
Click on View Instances.

Launch Status

Your instances are now launching

The following instance launches have been initiated: [i-05d2930c10dc7a5d8](#) [View launch log](#)

Get notified of estimated charges

[Create billing alerts](#) to get an email notification when estimated charges on your AWS bill exceed an amount you define (for example, if you exceed the free usage tier).

How to connect to your instances

Your instances are launching, and it may take a few minutes until they are in the **running** state, when they will be ready for you to use. Usage hours on your new instances will start immediately and continue to accrue until you stop or terminate your instances.

Click **View Instances** to monitor your instances' status. Once your instances are in the **running** state, you can **connect** to them from the Instances screen. [Find out](#) how to connect to your instances.

▼ Here are some helpful resources to get you started

- How to connect to your Linux instance
- Learn about AWS Free Usage Tier

- Amazon EC2: User Guide
- Amazon EC2: Discussion Forum

While your instances are launching you can also

- Create status check alarms to be notified when these instances fail status checks. (Additional charges may apply)
- Create and attach additional EBS volumes (Additional charges may apply)
- Manage security groups

click

View Instances

Step10: Instance and its details will be listed on the below page once view instance is clicked.
Click on connect to make a remote connection to the created instance.

Launch Instance

Connect

Actions

Filter by tags and attributes or search by keyword

Name

Instance ID

Instance Type

Availability Zone

Instance State

Status Checks

Alarm Status

Public DNS (IPv4)

IPv4 Public IP

IPv6 IPs

Key Name

i-05d2930c10dc7a5d8

t2.micro

us-east-2c

running

2/2 checks ...

None

ec2-18-191-98-6.us-east-2.compute.amazonaws.com

18.191.98.6

-

press_aws

Instance: i-05d2930c10dc7a5d8

Public DNS: ec2-18-191-98-6.us-east-2.compute.amazonaws.com

Description

Status Checks

Monitoring

Tags

Instance ID

i-05d2930c10dc7a5d8

Instance state

running

Instance type

t2.micro

Elastic IPs

-

Availability zone

us-east-2c

Security groups

[launch-wizard-1](#) · [view inbound rules](#) · [view outbound rules](#)

Scheduled events

No scheduled events

AMI ID

[ubuntu/images/hvm-ssd/ubuntu-xenial-16.04-amd64-server-20180814](#)
[\(ami-0552e3455b9bc8d50\)](#)

Platform

-

IAM role

-

Key pair name

press_aws

EBS-optimized

False

Root device type

ebs

Root device

/dev/sda1

Block devices

/dev/sda1

Elastic GPU

-

Elastic GPU type

-

Elastic GPU status

-

Public DNS (IPv4)

ec2-18-191-98-6.us-east-2.compute.amazonaws.com

IPv4 Public IP

18.191.98.6

IPv6 IPs

-

Private DNS

ip-172-31-46-76.us-east-2.compute.internal

Private IPs

172.31.46.76

Secondary private IPs

-

VPC ID

vpc-2385af4b

Subnet ID

subnet-92a855de

Network interfaces

eth0

Source/dest. check

True

T2/T3 Unlimited

Disabled

Owner

973978153560

Launch time

September 11, 2018 at 1:58:34 PM UTC-7 (less than one hour)

Termination protection

False

Lifecycle

normal

Monitoring

basic

Alarm status

None

Kernel ID

-

RAM disk ID

-

Placement group

-

Virtualization

hvm

Reservation

r-030bc130fdb72591

AMI launch index

0

Tenancy

default

Host ID

-

Affinity

-

Step10: Follow the instruction to connect to the instance.

Connect To Your Instance

I would like to connect with

☒ A standalone SSH client ⓘ
☐ A Java SSH Client directly from my browser (Java required) ⓘ

To access your instance:

1. Open an SSH client. (find out how to [connect using PuTTY](#))

2. Locate your private key file (press_aws.pem). The wizard automatically detects the key you used to launch the instance.

3. Your key must not be publicly viewable for SSH to work. Use this command if needed:

chmod 400 press_aws.pem

4. Connect to your instance using its Public DNS:

ec2-18-191-98-6.us-east-2.compute.amazonaws.com

Example:

ssh -i "press_aws.pem" ubuntu@ec2-18-191-98-6.us-east-2.compute.amazonaws.com

Please note that in most cases the username above will be correct, however please ensure that you read your AMI usage instructions to ensure that the AMI owner has not changed the default AMI username.

If you need any assistance connecting to your instance, please see our [connection documentation](#).

Close

Step11: successful connection from my mac to aws instance.

```
[Prashanth's-MacBook-Air:~$] prashanth$ chmod 400 press_aws.pem
[Prashanth's-MacBook-Air:Desktop prashanth$] ssh -i "press_aws.pem" ubuntu@ec2-18-191-98-6.us-east-2.compute.amazonaws.com
The authenticity of host 'ec2-18-191-98-6.us-east-2.compute.amazonaws.com (18.191.98.6)' can't be established.
ECDSA key fingerprint is SHA256:86JJfFL/Nd1rSzYqqbeVsZIXd8uRv75JrAVsz1EeKBg.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added 'ec2-18-191-98-6.us-east-2.compute.amazonaws.com,18.191.98.6' (ECDSA) to the list of known hosts.
Welcome to Ubuntu 16.04.5 LTS (GNU/Linux 4.4.0-1065-aws x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

Get cloud support with Ubuntu Advantage Cloud Guest:
http://www.ubuntu.com/business/services/cloud

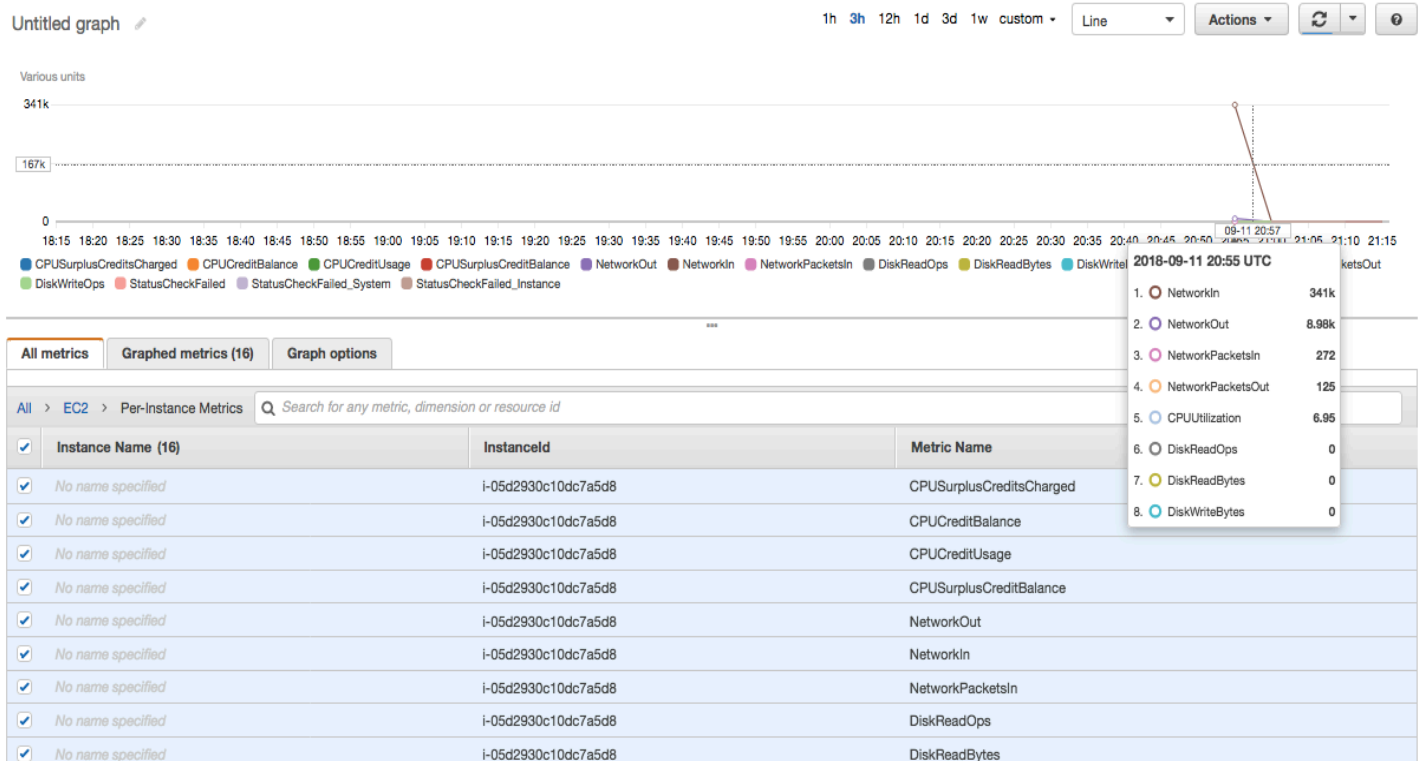
0 packages can be updated.
0 updates are security updates.

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details. We are inside aws instance.
ubuntu@ip-172-31-46-76:~$
```

Step12: AWS CloudWatch report on instance creation.



Step13: Planning to run a simple python application.

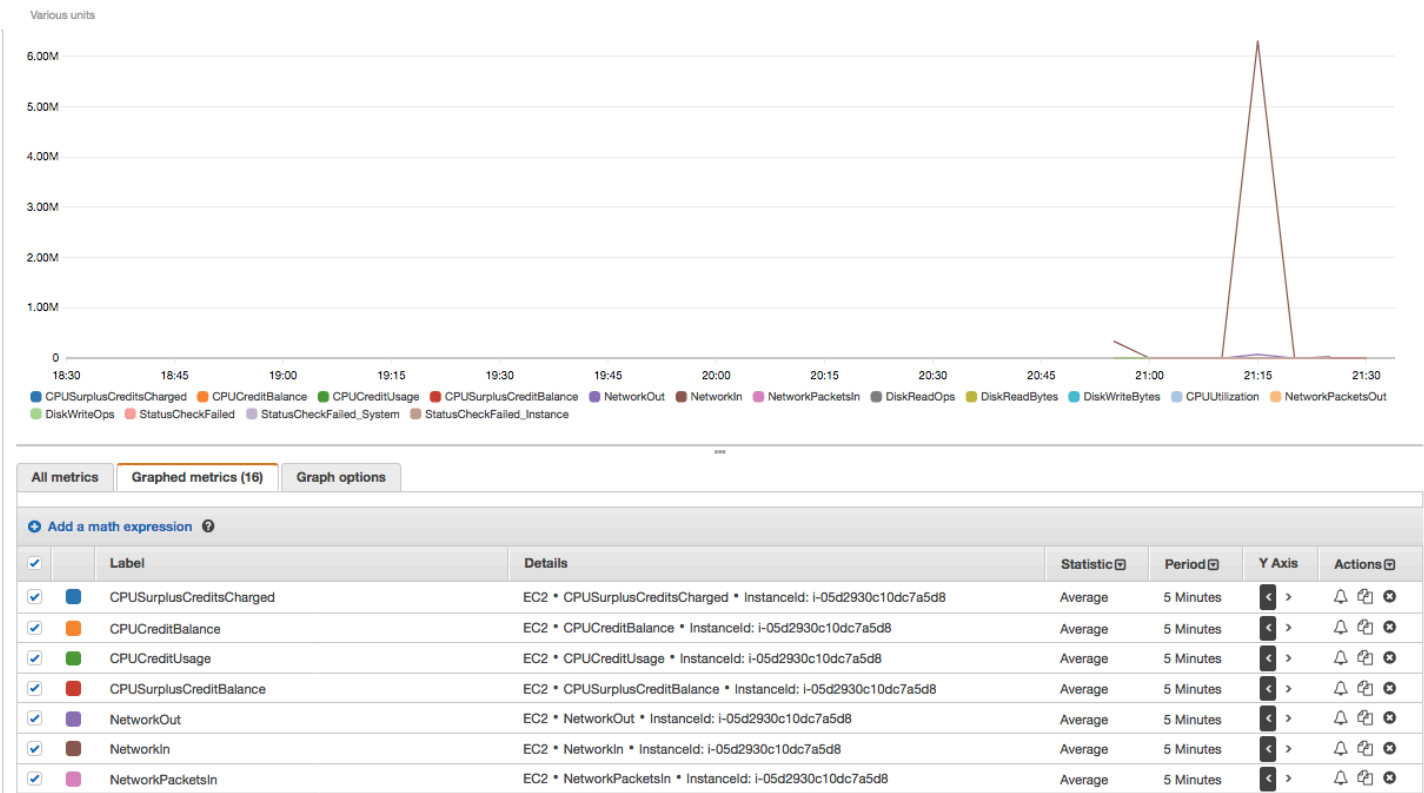
13.a : Install python 3.6 on ubuntu.

```
[ubuntu@ip-172-31-46-76:~$ sudo add-apt-repository ppa:jonathonf/python-3.6
[ubuntu@ip-172-31-46-76:~$ sudo apt-get install python3.6
[ubuntu@ip-172-31-46-76:~$ python3.6 --version
Python 3.6.5
```

13.b : Write a simple python application and launched it.

```
[ubuntu@ip-172-31-46-76:~$ sudo vim AWS_python_application.py
[ubuntu@ip-172-31-46-76:~$ python3 AWS_python_application.py
Prashanth Rajasekar
011822460
prashanth.rajasekar@sjsu.edu
4086446432
-----
Successfully launched the application....
ubuntu@ip-172-31-46-76:~$
```

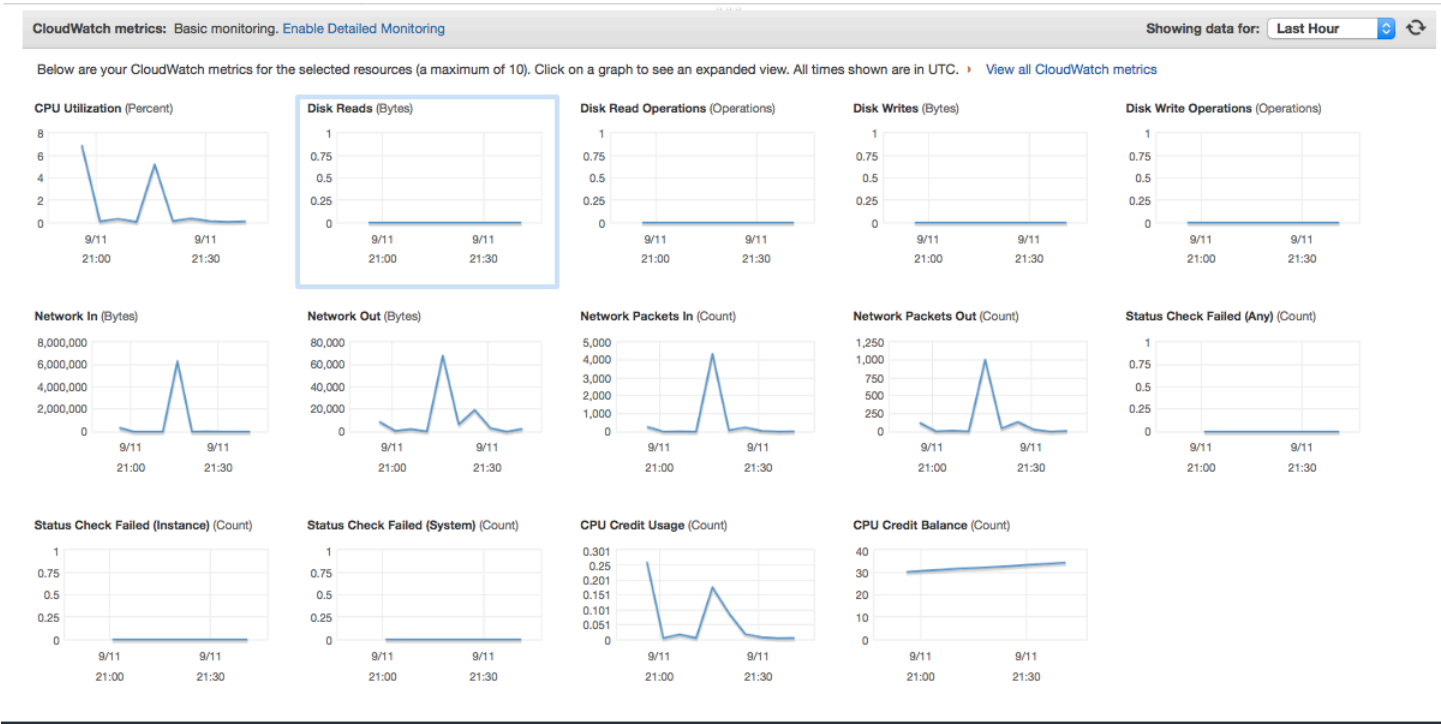

Step14: Cloudwatch metrics after launching the application.



Step15: Resource Usage.

2018-09-11 21:15 UTC		
1.	NetworkIn	6.31M
2.	NetworkOut	68.0k
3.	NetworkPacketsIn	4.34k
4.	NetworkPacketsOut	1.00k
5.	CPUCreditBalance	31.7
6.	CPUUtilization	5.21
7.	CPUCreditUsage	0.005
8.	CPU Surplus Credits Charged	0

Step16: Similar cloudwatch metrics.



Thank You.