

CSC456/591

AWS EC2 Tutorial

Zhengyi Qiu



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AWS Personal Health Dashboard

Explore the AWS platform, cloud products, and capabilities

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news

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Move mouse to My Account and click AWS Management Console



Root user sign in ⓘ

Email: zqiu2@ncsu.edu

Password

[Forgot password?](#)

.....

Sign in

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AWS Backup

Centrally manage and automate backups across AWS services

The diagram illustrates the AWS Backup service. It features a central gear icon representing the backup process. Orange lines connect this gear to three data storage icons: a cylinder representing a database, a square representing a file, and a rectangle representing a document. Above the file icon, there is a circular arrow icon with two arrows pointing in opposite directions, symbolizing the continuous and automated nature of backups across multiple AWS services.

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Log in your account

AWS Management Console

AWS services

Find Services

You can enter names, keywords or acronyms.



Example: Relational Database Service, database, RDS

▼ Recently visited services



Support



Billing

▼ All services



Access resources on the go



Access the Management Console using the AWS Console Mobile App. [Learn more](#)

Explore AWS

Amazon SageMaker

Build, train, and deploy machine learning models. [Learn more](#)

From the bar right above, choose Ohio

Click EC2

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NETWORK & SECURITY**Resources**

You are using the following Amazon EC2 resources in the US East (Ohio) region:

0 Running Instances

0 Dedicated Hosts

0 Volumes

1 Key Pairs

0 Placement Groups

0 Elastic IPs

0 Snapshots

0 Load Balancers

2 Security Groups

Learn more about the latest in AWS Compute from AWS re:Invent by viewing the [EC2 Videos](#).**Create Instance**

To start using Amazon EC2 you will want to launch a virtual server, known as an Amazon EC2 instance.

Launch Instance

Note: Your instances will launch in the US East (Ohio) region

Service Health**Service Status:** US East (Ohio):**Availability Zone Status:****Scheduled Events****US East (Ohio):**

No events

Account Attributes**Supported Platforms**

VPC

Default VPC

vpc-3b119b53

Resource ID length management**Console experiments****Additional Information****Getting Started Guide****Documentation****All EC2 Resources****Forums****Pricing****Contact Us****AWS Marketplace**

Find free software trial products in the AWS Marketplace from the [EC2 Launch Wizard](#). Or try these popular AMIs:

[Beraccuda CloudGen Firewall for AWS](#)[Feedback](#)[English \(US\)](#)

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[Privacy Policy](#)[Terms of Use](#)**Click Launch Instance**

1. Choose AMI

2. Choose Instance Type

3. Configure Instance

4. Add Storage

5. Add Tags

6. Configure Security Group

7. Review

[Cancel and Exit](#)

Step 1: Choose an Amazon Machine Image (AMI)

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. You can select an AMI provided by AWS, our user community, or the AWS Marketplace; or you can select one of your own AMIs.

Quick Start (4) ◀ ▶ 1 to 4 of 4 AMIs

My AMIs (0) Select

AWS Marketplace (69) 64-BIT (x86)

Community AMIs (249)

Free tier only (i)

Deep Learning AMI (Ubuntu) Version 21.2 - ami-0a47106e391391252 Select

 MXNet-1.3, TensorFlow-1.12, PyTorch-1.0, Keras-2.2, Chainer-5.2, Caffe/2-0.8, Theano-1.0 & CNTK-2.6, configured with NVIDIA CUDA, cuDNN, NCCL, Intel MKL-DNN, Docker & NVIDIA-Docker. For a fully managed experience, check: <https://aws.amazon.com/sagemaker>

Root device type: ebs Virtualization type: hvm

Deep Learning AMI (Amazon Linux) Version 21.2 - ami-0a06156dfe1431263 Select

 **Amazon Linux** MXNet-1.3, TensorFlow-1.12, PyTorch-1.0, Keras-2.2, Chainer-5.1, Caffe/2-0.8, Theano-1.0 & CNTK-2.6, configured with NVIDIA CUDA, cuDNN, NCCL, Intel MKL-DNN, Docker & NVIDIA-Docker. For a fully managed experience, check: <https://aws.amazon.com/sagemaker>

Root device type: ebs Virtualization type: hvm

Search for 'cuda'

Select the first one

[1. Choose AMI](#)[2. Choose Instance Type](#)[3. Configure Instance](#)[4. Add Storage](#)[5. Add Tags](#)[6. Configure Security Group](#)[7. Review](#)

Step 2: Choose an Instance Type

<input type="checkbox"/>	Compute optimized	c4.8xlarge	36	60	EBS only	Yes	10 Gigabit	Yes
<input type="checkbox"/>	GPU instances	g3s.xlarge	4	30.5	EBS only	Yes	Up to 10 Gigabit	Yes
<input type="checkbox"/>	GPU instances	g3.4xlarge	16	122	EBS only	Yes	Up to 10 Gigabit	Yes
<input type="checkbox"/>	GPU instances	g3.8xlarge	32	244	EBS only	Yes	10 Gigabit	Yes
<input type="checkbox"/>	GPU instances	g3.16xlarge	64	488	EBS only	Yes	25 Gigabit	Yes
<input checked="" type="checkbox"/>	GPU instances	p2.xlarge	4	61	EBS only	Yes	High	Yes
<input type="checkbox"/>	GPU instances	p2.8xlarge	32	488	EBS only	Yes	10 Gigabit	Yes
<input type="checkbox"/>	GPU instances	p2.16xlarge	64	732	EBS only	Yes	25 Gigabit	Yes
<input type="checkbox"/>	GPU instances	p3.2xlarge	8	61	EBS only	Yes	Up to 10 Gigabit	Yes
<input type="checkbox"/>	GPU instances	p3.8xlarge	32	244	EBS only	Yes	10 Gigabit	Yes
<input type="checkbox"/>	GPU instances	p3.16xlarge	64	488	EBS only	Yes	25 Gigabit	Yes

[Cancel](#)[Previous](#)[Review and Launch](#)[Next: Configure Instance Details](#)[Feedback](#)[English \(US\)](#)

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Scroll down and select the p2.xlarge instance

Click Review and Launch

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 7: Review Instance Launch

AMI Details

[Edit AMI](#)**Deep Learning AMI (Ubuntu) Version 21.2 - ami-0a47106e391391252**

MXNet-1.3, TensorFlow-1.12, PyTorch-1.0, Keras-2.2, Chainer-5.2, Caffe/2-0.8, Theano-1.0 & CNTK-2.6, configured with NVIDIA CUDA, cuDNN, NCCL, Intel MKL-DNN, Docker & NVIDIA-Docker. For a fully managed experience, check: <https://aws.amazon.com/sagemaker>

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
p2.xlarge	11.75	4	61	EBS only	Yes	High

Security Groups

[Edit security groups](#)

Security group name launch-wizard-2

Description launch-wizard-2 created 2019-03-06T13:52:15.392-05:00

[Type](#) ⓘ[Protocol](#) ⓘ[Port Range](#) ⓘ[Source](#) ⓘ[Description](#) ⓘ[Cancel](#)[Previous](#)[Launch](#)[Feedback](#)[English \(US\)](#)

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Click Edit security groups

[1. Choose AMI](#)[2. Choose Instance Type](#)[3. Configure Instance](#)[4. Add Storage](#)[5. Add Tags](#)[6. Configure Security Group](#)[7. Review](#)

Step 6: Configure Security Group

A security group is a set of firewall rules that control the traffic for your instance. On this page, you can add rules to allow specific traffic to reach your instance. For example, if you want to set up a web server and allow Internet traffic to reach your instance, add rules that allow unrestricted access to the HTTP and HTTPS ports. You can create a new security group or select from an existing one below. [Learn more](#) about Amazon EC2 security groups.

Assign a security group: Create a new security group

Select an existing security group

Security group name:

Description:

Type <small>i</small>	Protocol <small>i</small>	Port Range <small>i</small>	Source <small>i</small>	Description <small>i</small>	
SSH	TCP	22	<input style="border: 2px solid red; width: 100px; height: 25px;" type="text" value="My IP"/> 152.7.255.196/32	e.g. SSH for Admin Desktop	<small>X</small>

[Add Rule](#)

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

You can create a new one or an existing one

In Source, select My IP

Click Review and Launch

[1. Choose AMI](#)[2. Choose Instance Type](#)[3. Configure Instance](#)[4. Add Storage](#)[5. Add Tags](#)[6. Configure Security Group](#)[7. Review](#)

Step 7: Review Instance Launch

Instance Type	ECUs	vCPUs	Memory (GiB)	Instance Storage (GB)	EBS-Optimized Available	Network Performance
p2.xlarge	11.75	4	61	EBS only	Yes	High

▼ Security Groups

[Edit security groups](#)**Security group name** launch-wizard-2**Description** launch-wizard-2 created 2019-03-06T13:52:15.374-05:00

Type ⓘ	Protocol ⓘ	Port Range ⓘ	Source ⓘ	Description ⓘ
SSH	TCP	22	152.7.255.196/32	

▶ Instance Details

[Edit instance details](#)

▶ Storage

[Edit storage](#)

▶ Tags

[Edit tags](#)[Cancel](#)[Previous](#)[Launch](#)[Feedback](#)[English \(US\)](#)

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Scroll down and click Launch

1. Choose AMI

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7. Review

Step 7: Review Instance Launch

Instance Type	ECUs
p2.xlarge	11.75

▼ Security Groups

Security group name

la

Description

la

Type ⓘ

SSH

► Instance Details

► Storage

► Tags

Select an existing key pair or create a new key pair X

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

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**

Network Performance
High

[Edit security groups](#)

Description ⓘ

[Edit instance details](#)[Edit storage](#)[Edit tags](#)[Cancel](#) [Previous](#) [Launch](#)[Feedback](#) [English \(US\)](#)

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Enter the key pair name

Download key pair

Launch the instance

Launch Status

✓ Your instances are now launching

The following instance launches have been initiated: [i-0edfcf627934b726b](#) [View launch log](#)

ℹ 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

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Click the instance ID



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zqiu ▾

Ohio ▾

Support ▾

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Add filter



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Name

Instance ID

Instance Type

Availability Zone

Instance State

Status Checks

Alarm Status

Public DI



i-0edfcf627934b726b

p2.xlarge

us-east-2c

running

Initializing

None

ec2-3-16-

Instance: i-0edfcf627934b726b

Public DNS: ec2-3-16-44-63.us-east-2.compute.amazonaws.com



Description

Status Checks

Monitoring

Tags

Instance ID

Public DNS (IPv4)

ec2-3-16-44-63.us-east-2.compute.amazonaws.com

Instance state

IPv4 Public IP

3.16.44.63

Instance type

IPv6 IPs

-

Elastic IPs

Private DNS

ip-172-31-41-126.us-east-2.compute.internal

Availability zone

Private IPs

172.31.41.126



Security groups

Secondary private IPs

Feedback

English (US)

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search : i-0edfcf627934b726b

Add filter



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Name

Instance ID

Instance Type

Availability Zone

Instance State

Status Checks

Alarm Status

Public DI



i-0edfcf627934b726b

p2.xlarge

us-east-2c

running

2/2 checks ...

None

ec2-3-16-

Instance: i-0edfcf627934b726b**Public DNS: ec2-3-16-44-63.us-east-2.compute.amazonaws.com****Description**

Status Checks

Monitoring

Tags

Instance ID i-0edfcf627934b726b

Public DNS (IPv4) ec2-3-16-44-63.us-east-2.compute.amazonaws.com

Instance state running

IPv4 Public IP 3.16.44.63

Instance type p2.xlarge

IPv6 IPs -

Elastic IPs

Private DNS ip-172-31-41-126.us-east-2.compute.internal

Availability zone us-east-2c

Private IPs 172.31.41.126

Security groups launch-wizard-2 . view inbound rules . view outbound rules

Secondary private IPs

Feedback

English (US)

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After the Status Checks passed, you can ssh to your instance

SSH to the instance

```
cd /path/to/your/key  
chmod 400 key.pem
```

```
ssh -i /path/to/your/key/key.pem ubuntu@ip.address
```

After you connect to the instance, you can try nvcc -V
nvidia-smi -a -q to check configuration of GPU

```
[ubuntu@ip-172-31-31-68:~$ nvcc -V  
nvcc: NVIDIA (R) Cuda compiler driver  
Copyright (c) 2005-2017 NVIDIA Corporation  
Built on Fri_Sep_1_21:08:03_CDT_2017  
Cuda compilation tools, release 9.0, V9.0.176  
ubuntu@ip-172-31-31-68:~$ ]
```

Transfer file to the instance:

```
scp -i /path/to/your/key/key.pem /path/to/the/file ubuntu@ip.address:~
```

Use screen to prevent you from disconnecting from the instance

Stop the instance if you are not using it.

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Stop the instance:

Click Actions->Instance State->Stop

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search : i-0edfcf627934b726b

[Add filter](#)

Name

Instance ID

Instance Type

Availability Zone

Instan



i-0edfcf627934b726b

p2.xlarge

us-east-2c

ru

[My Account](#)[My Organization](#)[My Billing Dashboard](#)[My Security Credentials](#)[Sign Out](#)

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Alarm Status

Public DI

None



ec2-3-16-

Instance: [i-0edfcf627934b726b](#)Public DNS: [ec2-3-16-44-63.us-east-2.compute.amazonaws.com](#)[Description](#)[Status Checks](#)[Monitoring](#)[Tags](#)Instance ID: [i-0edfcf627934b726b](#)Public DNS (IPv4): [ec2-3-16-44-63.us-east-2.compute.amazonaws.com](#)Instance state: [running](#)IPv4 Public IP: [3.16.44.63](#)Instance type: [p2.xlarge](#)IPv6 IPs: [-](#)

Elastic IPs:

Private DNS: [ip-172-31-41-126.us-east-2.compute.internal](#)Availability zone: [us-east-2c](#)Private IPs: [172.31.41.126](#)Security groups: [launch-wizard-2 . view inbound rules . view outbound rules](#)

Secondary private IPs:

Redeem the credit

Click your user name and go to My Billing Dashboard

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Credits



Please enter your code below to redeem your credits.

Promo Code

Security Check



Refresh Image

Please type the characters as shown above

By clicking "Redeem" you indicate that you have read and agree to the terms of the AWS Promotional Credit Terms & Conditions located [here](#).

Click Credit on the left column

Enter the Promo Code TA sent to you

Scroll down and click Redeem