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CS 381

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Project 0

For non image version:

<https://github.com/Talen-520/Cloud-Computing/blob/main/README.md>

Installation and preparation

Following instuction is done by ubuntu(Linux)

AWS EC2 installation with your system:

<https://docs.aws.amazon.com/cli/latest/userguide/getting-started-install.html>

Command:

```
curl "https://awscli.amazonaws.com/awscli-exe-linux-x86_64.zip" -o "awscliv2.zip"
```

```
unzip awscliv2.zip
```

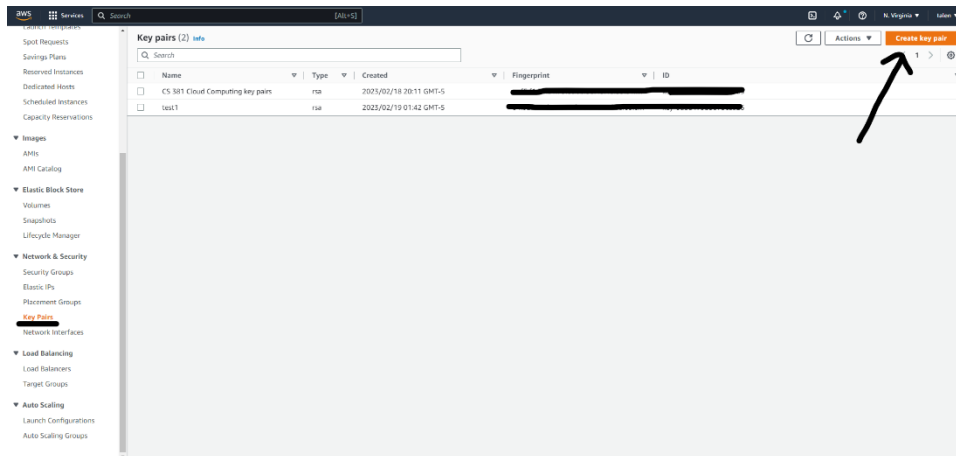
```
sudo ./aws/install
```

After above command, here is result:

```
tao727188712@DESKTOP-IBM4J8C:~$ ls
aws  awscliv2.zip  helloworld.c
tao727188712@DESKTOP-IBM4J8C:~$
```

Key pair:

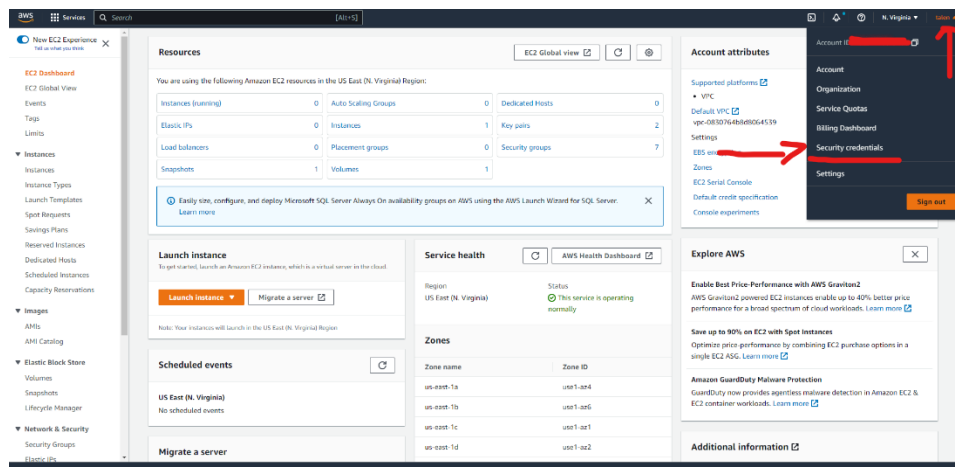
after sign in your account, click service at left top bar, select compute at left bar then click EC2(or just search EC2 on search bar) under network security -> key pairs create a key and download it

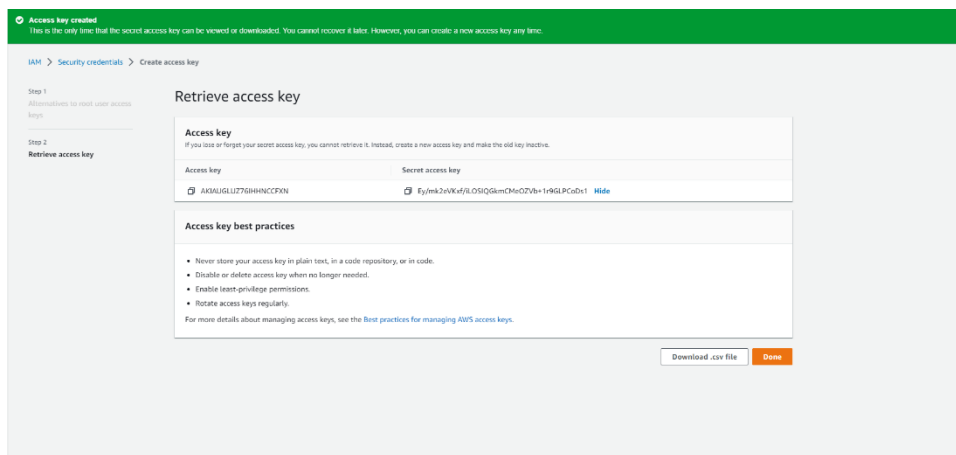
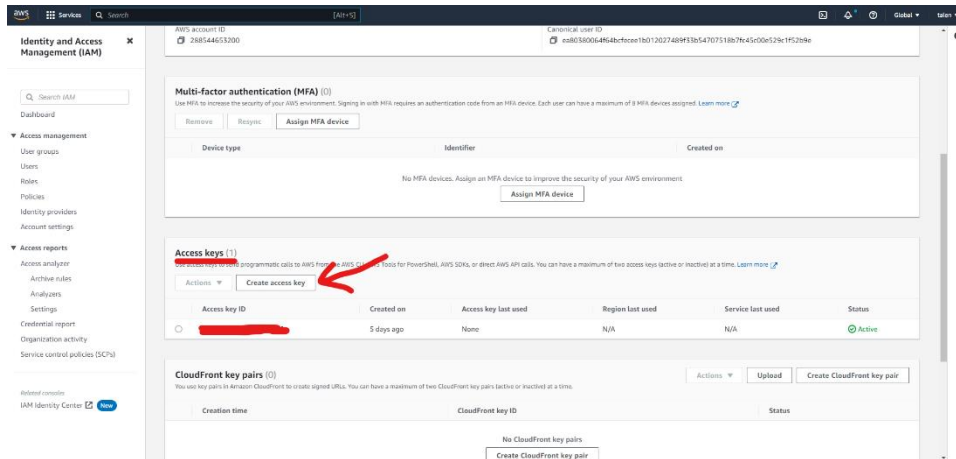


Access key:

click your account icon at right top: it shows Account ID, setting, Organization etc...

select security credentials -> scroll down find access key option, create one you need and save it in somewhere





Note: you may need enter -O -W your access key every command

Do not expose your access key online such as github, this action cause AWS to restrict the functionality of your account after you create access key

Configure setup

command: aws configure

document: <https://docs.aws.amazon.com/cli/latest/userguide/getting-started-quickstart.html>

Access key:

Secret access key:

Region: us-east-1

Format: json

```
tao727188712@DESKTOP-IBM4J8C:~$ aws configure
AWS Access Key ID [*****NE5Y]: AKIAUGLUZ76IHHNCCFXN
AWS Secret Access Key [*****1Ssd]: Ey/mk2eVKxf/iLOSIQgkmMe0ZVb+1r9GLPCoDs1
Default region name [us-east-1]: us-east-1
Default output format [json]: json
```

in Linux follwing Test your environment by running ec2-describe-regions command

ec2-describe-regions -O [access key] -W [secret key]

output be like:

```
tao727188712@DESKTOP-IBM4J8C:~$ ec2-describe-regions -O AKIAUGLUZ76IHHNCCFXN -W Ey/mk2eVKxf/iLOSIQgkmMe0ZVb+1r9GLPCoDs1
REGION    ap-south-1      ec2.ap-south-1.amazonaws.com
REGION    eu-north-1      ec2.eu-north-1.amazonaws.com
REGION    eu-west-3       ec2.eu-west-3.amazonaws.com
REGION    eu-west-2       ec2.eu-west-2.amazonaws.com
REGION    eu-west-1       ec2.eu-west-1.amazonaws.com
REGION    ap-northeast-3  ec2.ap-northeast-3.amazonaws.com
REGION    ap-northeast-2  ec2.ap-northeast-2.amazonaws.com
REGION    ap-northeast-1  ec2.ap-northeast-1.amazonaws.com
REGION    ca-central-1    ec2.ca-central-1.amazonaws.com
REGION    sa-east-1       ec2.sa-east-1.amazonaws.com
REGION    ap-southeast-1  ec2.ap-southeast-1.amazonaws.com
REGION    ap-southeast-2  ec2.ap-southeast-2.amazonaws.com
REGION    eu-central-1    ec2.eu-central-1.amazonaws.com
REGION    us-east-1       ec2.us-east-1.amazonaws.com
REGION    us-east-2       ec2.us-east-2.amazonaws.com
REGION    us-west-1       ec2.us-west-1.amazonaws.com
REGION    us-west-2       ec2.us-west-2.amazonaws.com
```

Create instance:

ec2-run-instances ami-22ce4934 -O [access key] -W [secret key] -t t2.micro -k [key pair]

//-t is instance type, bigger type will cost money -k is key pair for more information go to web

version EC2

For more details:

<https://docs.aws.amazon.com/cli/latest/userguide/cli-services-ec2-instances.html>

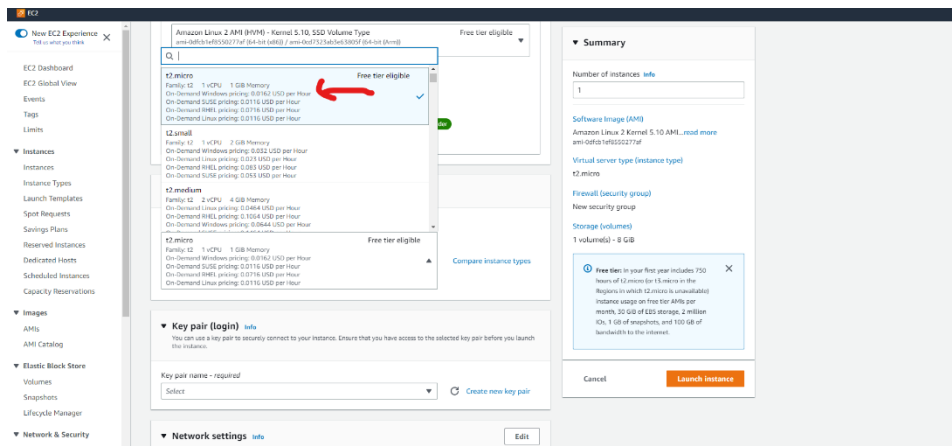
```
$ aws ec2 run-instances --image-id ami-xxxxxxx --count 1 --instance-type t2.micro --key-name MyKeyPair --
security-group-ids sg-903004f8 --subnet-id subnet-6e7f829e
```

Syntax with tag:

```
aws ec2 run-instances \
  --image-id ami-abc12345 \
  --count 1 \
  --instance-type t2.micro \
  --key-name MyKeyPair \
  --subnet-id subnet-6e7f829e \
  --tag-specifications
```

Example to create tags, you don't have to enter all command, some of them are optional:

```
aws ec2 create-tags --resource [instance ID] --tags Key=Name,Value=[tagname]
```



Check instance information:

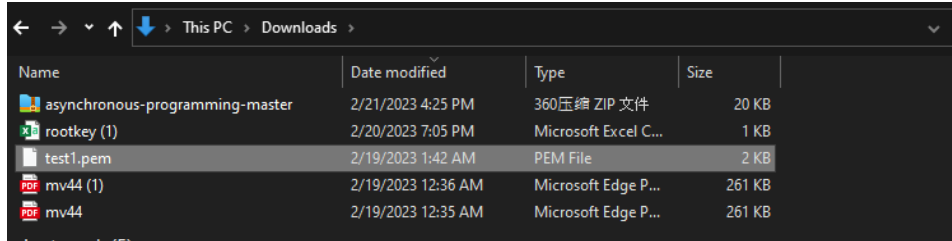
```
ec2-describe-regions [your instance id] -O [access key] -W [secret key]
```

ssh into the newly created instance:

```
chmod 400 [key location]
```

```
example: chmod 400 /mnt/c/Users/Owner/Downloads/test1.pem
```

Here is my key location



```
ssh -i /path/key-pair-name.pem instance-user-name@instance-IPv6-address
```

example: `ssh -i /mnt/c/Users/Owner/Downloads/test1.pem EC2-user1@ec2-18-234-79-`

`69.compute-1.amazonaws.com`

//you many need setup username first for your instance

Install an application:

You can install software on ec2 instances just like on any other linux machine, e.g.:

To install a package from a repository

```
[ec2-user ~]$ sudo yum install links
```

To install RPM package files that you have downloaded

```
[ec2-user ~]$ sudo yum install my-package.rpm
```

```
yum install -y perl emacs
```

docs reference:

<https://docs.aws.amazon.com/AWSEC2/latest/UserGuide/install-software.html>

Create image:

`ec2-create-image [instance id] -n [a image name] -O [access key] -W [secret key]` this will return an customized ami id, note it down example output: `ami-06744560fd4ad78ad`

Create an instance of this new image and terminate all your instances -- record time of each operation: `ec2-terminate-instances [instance-id]`

Now you can start another instance from your customized AMI!

`ec2-run-instances new-ami-id -k [key] -t [instance type] -O [access key] -W [secret key]`

example: `ec2-run-instances ami-06744560fd4ad78ad -k test1.pem -t t2.micro`

You can check available ami ID right here:

Application and OS Images (Amazon Machine Image) [Info](#)
An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. Search or Browse for AMIs if you don't see what you are looking for below

Search our full catalog including 1000s of application and OS images

Quick Start

Amazon Linux macOS Ubuntu Windows Red Hat S

Amazon Machine Image (AMI)

Amazon Linux 2 AMI (HVM) - Kernel 5.10, SSD Volume Type
ami-0dfcb1ef8550277af (64-bit (x86)) / ami-0cd7323ab3e63805f (64-bit (Arm))
Virtualization: hvm ENA enabled: true Root device type: ebs

Free tier eligible

Description
Amazon Linux 2 Kernel 5.10 AMI 2.0.20230207.0 x86_64 HVM gp2

Architecture 64-bit (x86) AMI ID ami-0dfcb1ef8550277af **Verified provider**

Number of instances [Info](#)
1

Software Image (AMI)
Amazon Linux 2 Kernel 5.10 AMI...[read more](#)
ami-0dfcb1ef8550277af

Virtual server type (instance type)
t2.micro

Firewall (security group)
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 IOs, 1 GB of snapshots, and 100 GB of bandwidth to the internet.

Cancel **Launch instance**

Cleaning up...

deregister your newly created AMI by:

1. Deregister the AMI

Deregister the AMI using the `deregister-image` command:

```
aws ec2 deregister-image --image-id ami-12345678
```

Or

Aws ec2-deregister ami-id-here

example: **aws ec2-deregister ami-06744560fd4ad78ad**

aws ec2-describe-snapshots | grep ami-06744560fd4ad78ad

docs reference:

<https://docs.aws.amazon.com/AWSEC2/latest/UserGuide/deregister-ami.html>

example: `ec2-describe-snapshots -O [access key] -W [secret key]`

`| grep ami-06744560fd4ad78ad`

```
tao727188712@DESKTOP-IBM4J8C:~$ ec2-describe-snapshots -O AKIAUGLUZ76IHHNCCFXN -W Ey/mk2eVKxf/1LOSIQGkmCMeOZVb+1r9GLPCoDs1
SNAPSHOT      snap-0e92b367db24f5ade  vol-02e926150a127ecfd  completed      2023-02-19T07:22:23+0000      100%      288544653200
Created by CreateImage(i-0dcad8ed9f70e6808) for ami-06744560fd4ad78ad  Not Encrypted
tao727188712@DESKTOP-IBM4J8C:~$
```

2. Snapshot ID above is snap-0e92b367db24f5ade

Then we delete it by command

```
ec2-delete-snapshot snap-beba4fd
```

docs reference:

<https://docs.aws.amazon.com/cli/latest/reference/ec2/delete-snapshot.html#examples>

1. Terminate instances (Optional)

If you are finished with an instance that you launched from the AMI, you can terminate it by using the `terminate-instances` command:

```
aws ec2 terminate-instances --instance-ids i-12345678
```


Cost:

AWS Cost Calculator base on my instance type

<https://aws.amazon.com/ec2/pricing/>

The cost per hour is

0.0116

Configure Amazon EC2 [Info](#)

Description
Enter a description for your estimate

Choose a location type [Info](#) Choose a Region
Region US East (N. Virginia)

EC2 specifications [Info](#)

Tenancy
Choose the tenancy type to run your Amazon EC2 instances on.
Shared Instances

Operating system
Choose the operating system to run your Amazon EC2 instances on.
Linux

Workloads
Choose the graph that best represents your monthly workload
☒ Constant usage ☐ Daily spike traffic ☐ Weekly spike traffic ☐ Monthly spike traffic

Number of instances
Please specify the total number of instances that you need each month.
1

Total Upfront cost: 49.93 USD [Show Details](#) Save and view summary **Save and add service**

Total Monthly cost: 0.00 USD

Don't forget terminate your unused instance:

Instances (1/1) [Info](#) [Connect](#)

Find instance by attribute or tag (case-sensitive)

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone
-	i-035233678fe7e7793	Stopped	t2.micro	-	No alarms	us-east-1d

Instance: i-035233678fe7e7793

Auto-assigned IP address
-

IAM Role
-

Instance details [Info](#)

Platform
Amazon Linux (Inferred)

Platform details
Linux/UNIX

Stop protection
Disabled

Instance auto-recovery

VPC ID
vpc-0830764b8b8064539

Subnet ID
subnet-04d7ebf65a604685d

AMI ID
ami-0afcb1ef8550277af

AMI name
amazon2_ami-kernel-5.10-hvm-2.0.20230207.0-x86_64-gp2

Launch time
Sun Feb 19 2023 01:25:53 GMT-0500 (Eastern Standard Time) (7 days)

Lifecycle

AWS Compute Optimizer finding
Opt-in to AWS Compute Optimizer for recommendations. [Learn more](#)

Auto Scaling Group name
-

Monitoring
disabled

Termination protection
Disabled

AMI location
amazon/amzn2_ami-kernel-5.10-hvm-2.0.20230207.0-x86_64-gp2

Stop-hibernate behavior

I forgot to terminate it so it charge me 16 hours.

Go to your billing dashboard by clicking account

Home

Billing

Bills

Payments

Credits

Purchase orders

Cost & usage reports

Cost categories

Cost allocation tags

Free tier

Billing Conductor

Cost Explorer

Budgets

Budgets reports

Savings Plans

Preferences

Billing preferences

Payment preferences

Consolidated billing

Tax settings

Permissions

Attached policies

Update your access permissions for AWS Billing, Cost Management, and Account consoles

The following IAM actions for AWS Billing, Cost Management, and Account consoles will reach the end of standard support: `aws-portal:ViewBilling`, `aws-portal:ModifyBilling`, `aws-portal:ViewAccount`, `aws-portal:ModifyAccount`, `aws-portal:ViewPaymentMethods`, `aws-portal:ModifyPaymentMethods`, `aws-portal:ViewUsage`, `purchase-orders:ViewPurchaseOrders`, and `purchase-orders:ModifyPurchaseOrders`. These actions will be replaced with granular IAM actions. Examples of impacted features include AWS Cost Explorer, AWS Budgets, Billing console, and more. To ensure you don't lose access, update your policies to include new access permissions. [Update your policies](#) before July 2025 or contact your access administrator to complete your action. For more information, please visit [Blog](#).

AWS Billing Dashboard

AWS Billing Dashboard

info

Unhide

Page refresh time: Saturday, February 25, 2023 at 8:01:16 PM EST

AWS summary

info

Current month's total forecast

USD 0.19

Total number of active services

5

Current MTD balance

USD 0.18

Total number of active AWS accounts

1

Prior month for the same period with trend

No data to display

Total number of active AWS Regions

16

Highest cost

info

Viewing highest service spend.

highest service spend

Service name

Elastic Compute Cloud

Trend compared to prior month

No data to display

Current MTD balance

USD 0.18

Prior month for the same period

No data to display

View your bill