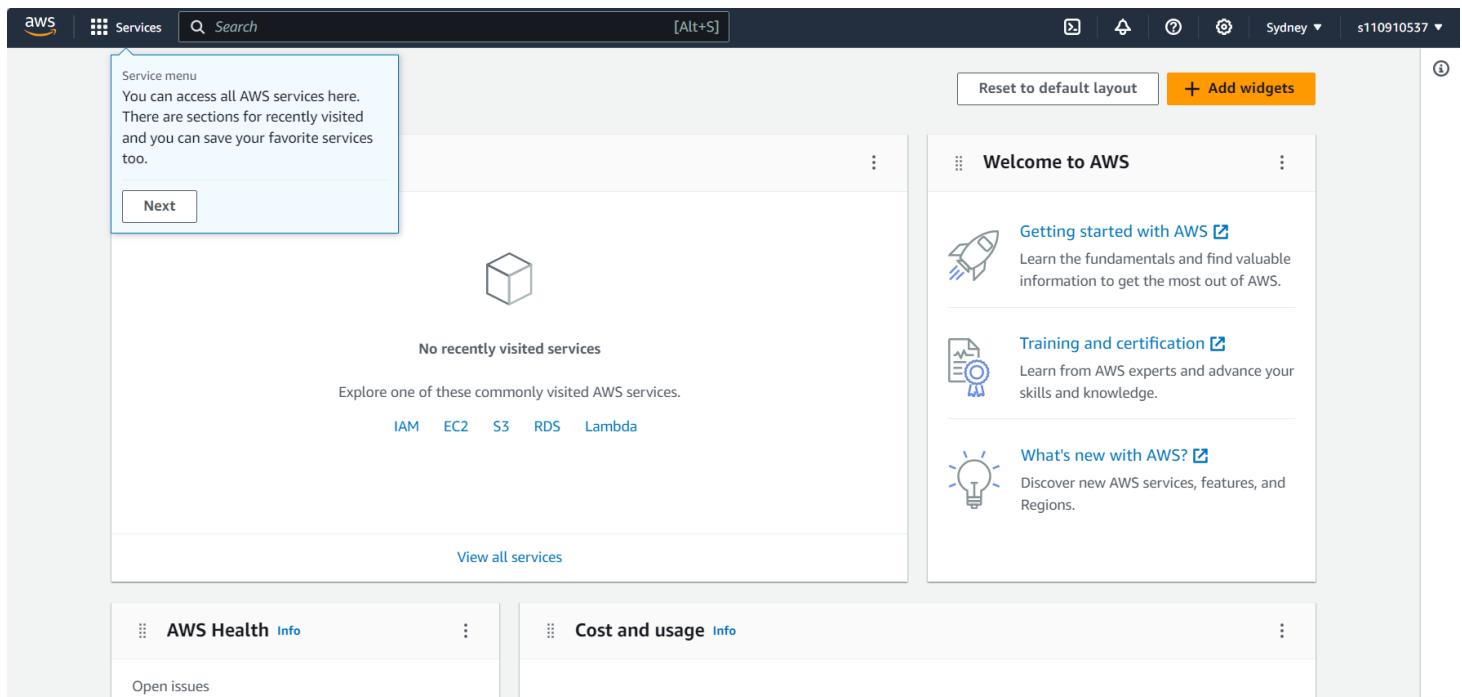
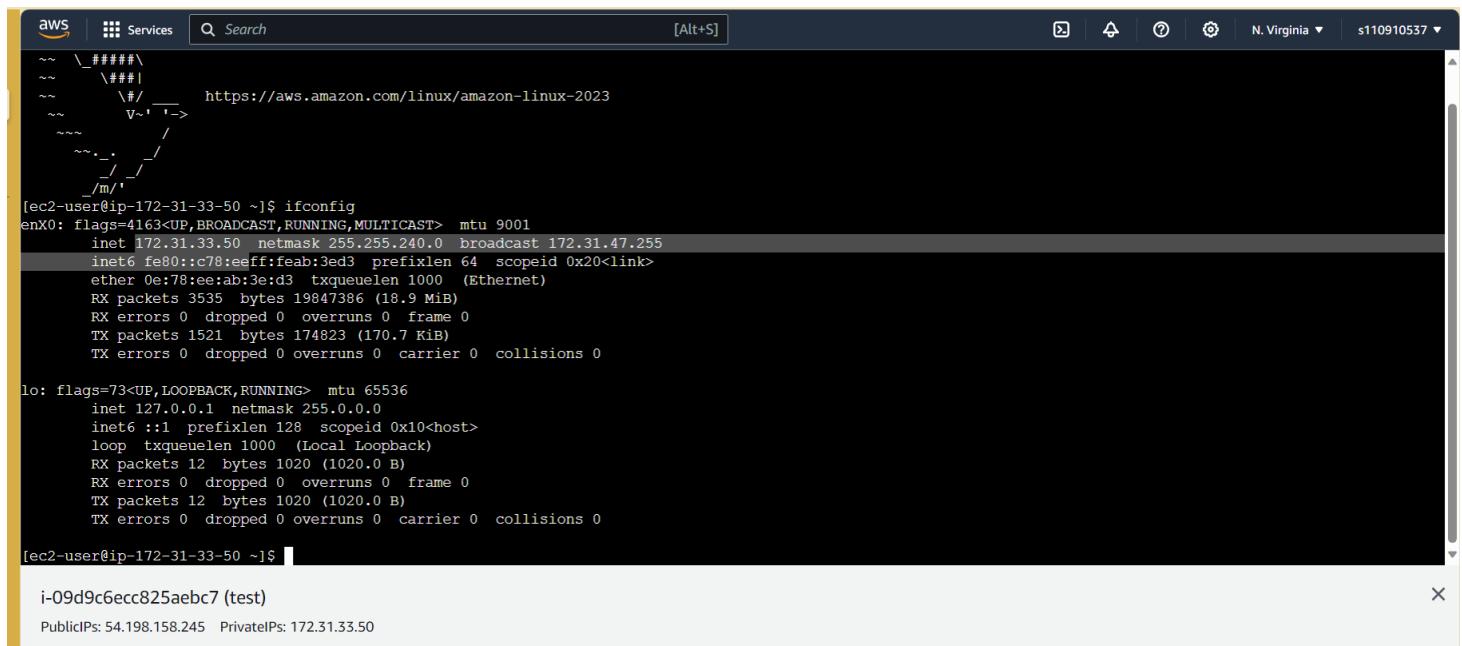


Home work:



The screenshot shows the AWS Home page. At the top, there's a search bar and a "Services" button. A "Service menu" box is open on the left, containing text about recently visited services and a "Next" button. On the right, there's a "Welcome to AWS" section with three cards: "Getting started with AWS" (with a rocket icon), "Training and certification" (with a graduation cap icon), and "What's new with AWS?" (with a lightbulb icon). Below these are sections for "AWS Health" and "Cost and usage".



```
aws | Services | Search | [Alt+S] | Sydney | s110910537 | N. Virginia | s110910537 |
```

```
~ \_#####
~ \###|
~ \#/   https://aws.amazon.com/linux/amazon-linux-2023
~ V~' '-->
~~ /_
~~_-'_/_/
~~/_/_/
~/m/`
```

```
[ec2-user@ip-172-31-33-50 ~]$ ifconfig
enX0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 9001
    inet 172.31.33.50 netmask 255.255.240.0 broadcast 172.31.47.255
        inet6 fe80::c78:efff:feab:3ed3 prefixlen 64 scopeid 0x20<link>
            ether 0e:78:ee:ab:3e:d3 txqueuelen 1000 (Ethernet)
            RX packets 3535 bytes 19847386 (18.9 MiB)
            RX errors 0 dropped 0 overruns 0 frame 0
            TX packets 1521 bytes 174823 (170.7 KiB)
            TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
        inet6 ::1 prefixlen 128 scopeid 0x10<host>
            loop txqueuelen 1000 (Local Loopback)
            RX packets 12 bytes 1020 (1020.0 B)
            RX errors 0 dropped 0 overruns 0 frame 0
            TX packets 12 bytes 1020 (1020.0 B)
            TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

[ec2-user@ip-172-31-33-50 ~]$
```

i-09d9c6ecc825aebc7 (test)
PublicIPs: 54.198.158.245 PrivateIPs: 172.31.33.50

```
Command Prompt × + ▾
Microsoft Windows [Version 10.0.22621.2283]
(c) Microsoft Corporation. All rights reserved.

C:\Users\user>ping 54.198.158.245

Pinging 54.198.158.245 with 32 bytes of data:
Reply from 54.198.158.245: bytes=32 time=259ms TTL=107
Reply from 54.198.158.245: bytes=32 time=211ms TTL=107
Reply from 54.198.158.245: bytes=32 time=283ms TTL=107
Reply from 54.198.158.245: bytes=32 time=215ms TTL=107

Ping statistics for 54.198.158.245:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 211ms, Maximum = 283ms, Average = 242ms

C:\Users\user>
```

碩士論文需要有一定的意志力不然完成不了。

這門課需要有扎實的Linux操作基礎，如果沒有基礎的話會學得很辛苦。

這節課需要使用到amazon的aws

能來上課就來上課，這門課一定要動手做

這們課會介紹關於aws的操作，

為什麼要學aws？有微軟有google的平台為什麼要學aws??

答案：aws是全部市佔率最高的，學完如果要去找相對應的工作可以符合需求，

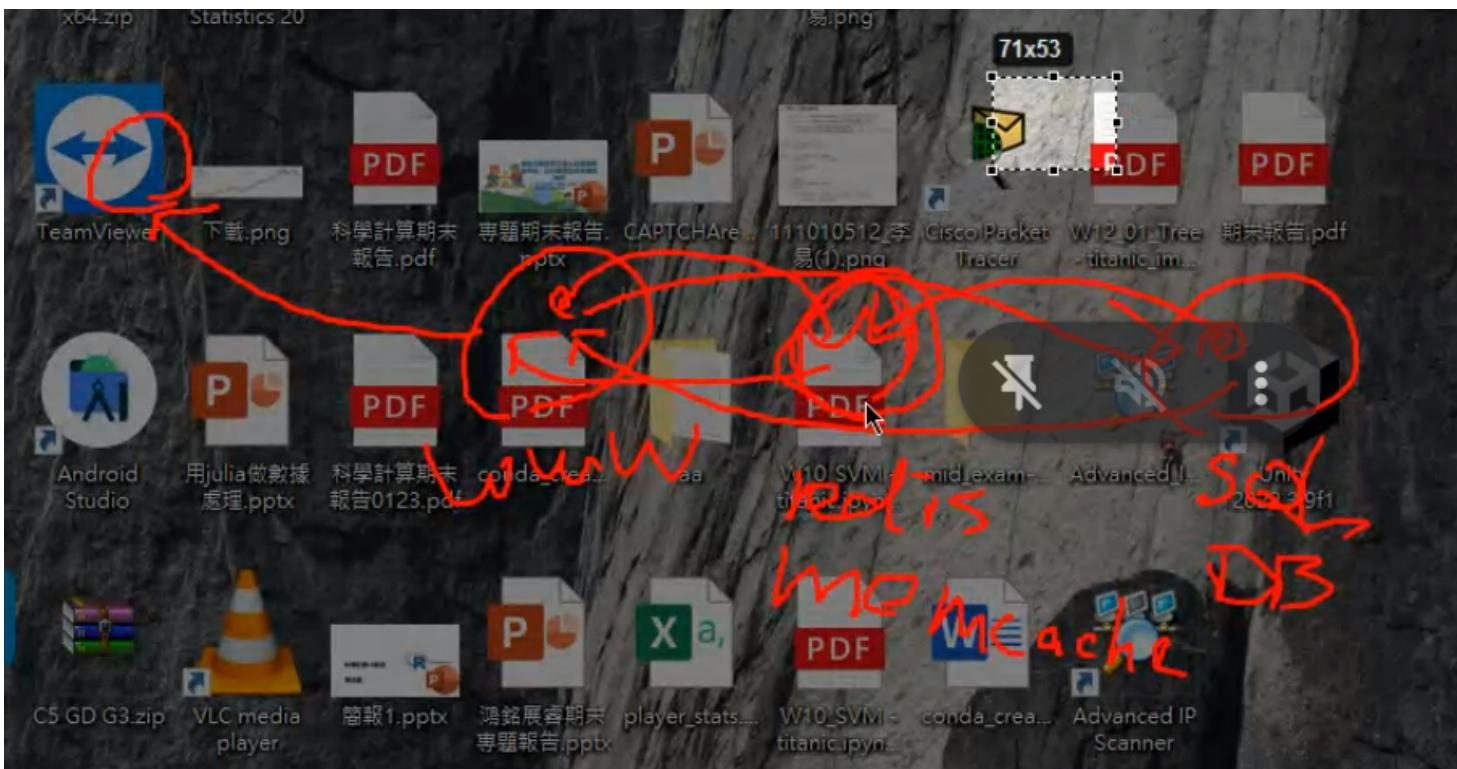
學完aws很容易掌握別的平台，有一些東西我們能夠講，雲端的平台會提供儲存的資源，運算的資源計算，在雲端開設一台虛擬機，如果不構可以開更多，可以根據需求配置機器的運算效能，

這是看工作的性質，計算輪cpu，容量：記憶體，

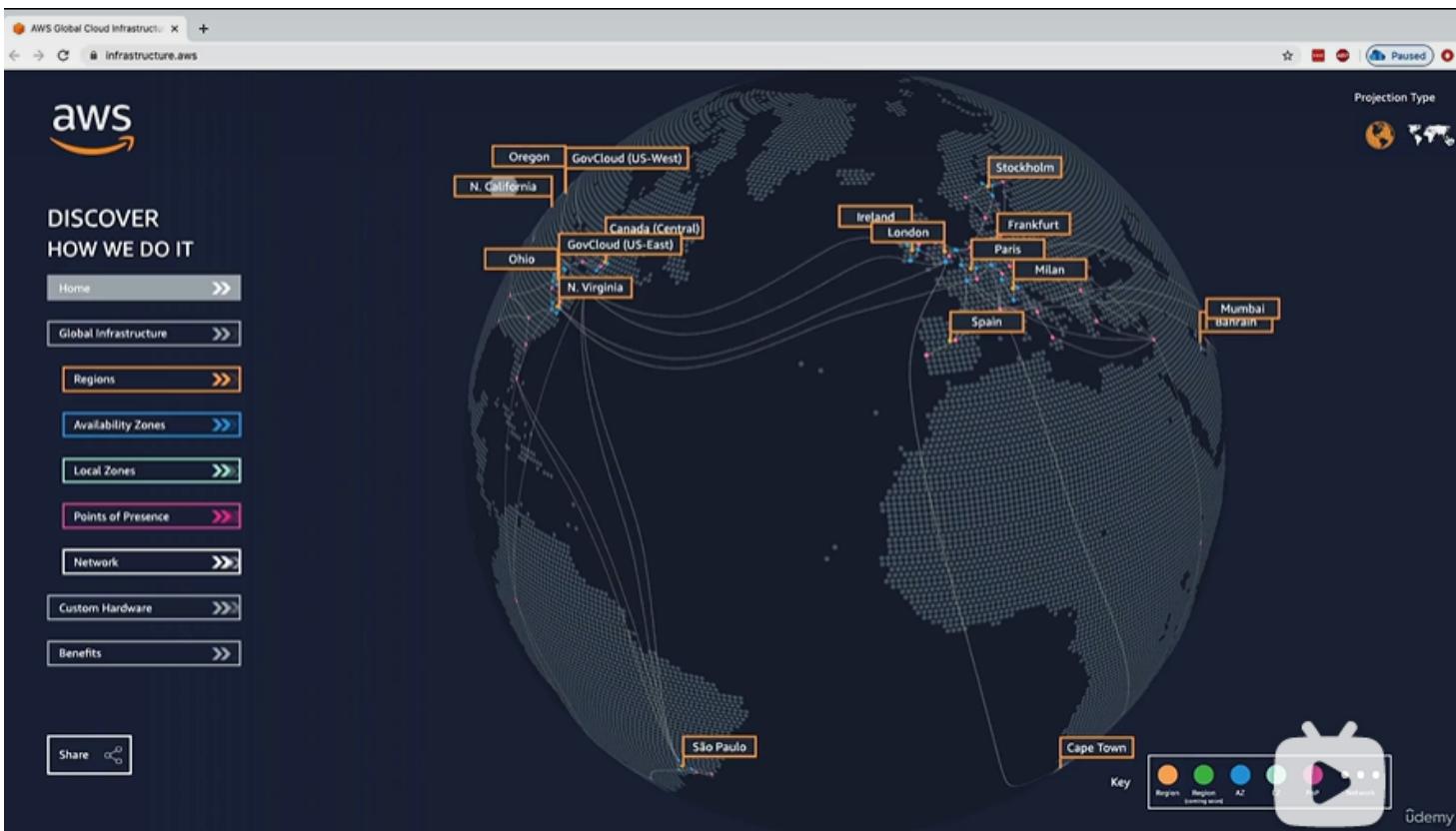
伺服器會去把資料從sql拿出來再給網頁但是速度比較慢，

因為從傳統硬碟讀取，

解：從網路跟網頁伺服器之間去使用快取資料庫 ex: redis



AWS的伺服器分布極廣在世界各地都有機會看到牠的蹤跡:



以記憶體為導向的資料庫(AWS可以提供)

可以選擇傳統的硬碟或SSD

還是很大的儲存磁帶

可以客製化你想要的機器將它產生出來

AI在運算的時候需要大量的運算，如果記憶體不夠好的話就可以使用AWS的服務，可以剋制出你需要的

資源

你用多少就收多少錢，不需要馬上買一台1，2十萬的電腦

計算資源再aws叫做ec2

也叫做計算資源，

要創造虛擬機，根據自己的需求來創造虛擬機，

有時候只要一台機器就可以完成了，

架一台網頁伺服器，只有單一台機器，機器掛=伺服器掛

所以怎麼建立多台伺服器是很重要的事

如果要建4台虛擬機，一直掛著沒用就會造成浪費

但是aws提供了 auto scaling

可以做一些監控，

如果我有一台虛擬機，cpu已經跑到80%它會自動幫你生成一台虛擬機

如果只剩30%就自動幫你關掉虛擬機，可以自動調整避免浪費

aws有很多東西都是免費的(一年)

但如果想要做一些特殊的功能就需要加一些錢

我們會控制在100 ~ 200元之間

註冊Domain name

a.online ...

台幣50元以下

要搭配服務需要註冊

aws管理dns的服務 0.2 dollar

如果超量就會扣錢，

為什麼要這樣去做？

如果之後要去外面學這些需要付出很多金錢經歷

學這些可以幫助你之後求職

安全性上面做得很好(比自己架的)

s3 儲存

比較有名的儲存

google drive one drive

s3也是雲端當中amazon提供的服務

除了可以用來儲存我們的資料

大數據分析也可以使用到，運算 模型 預測

也可以做個人的靜態網站

http 網站(過時)

透過一些額外的設定變成https的網站

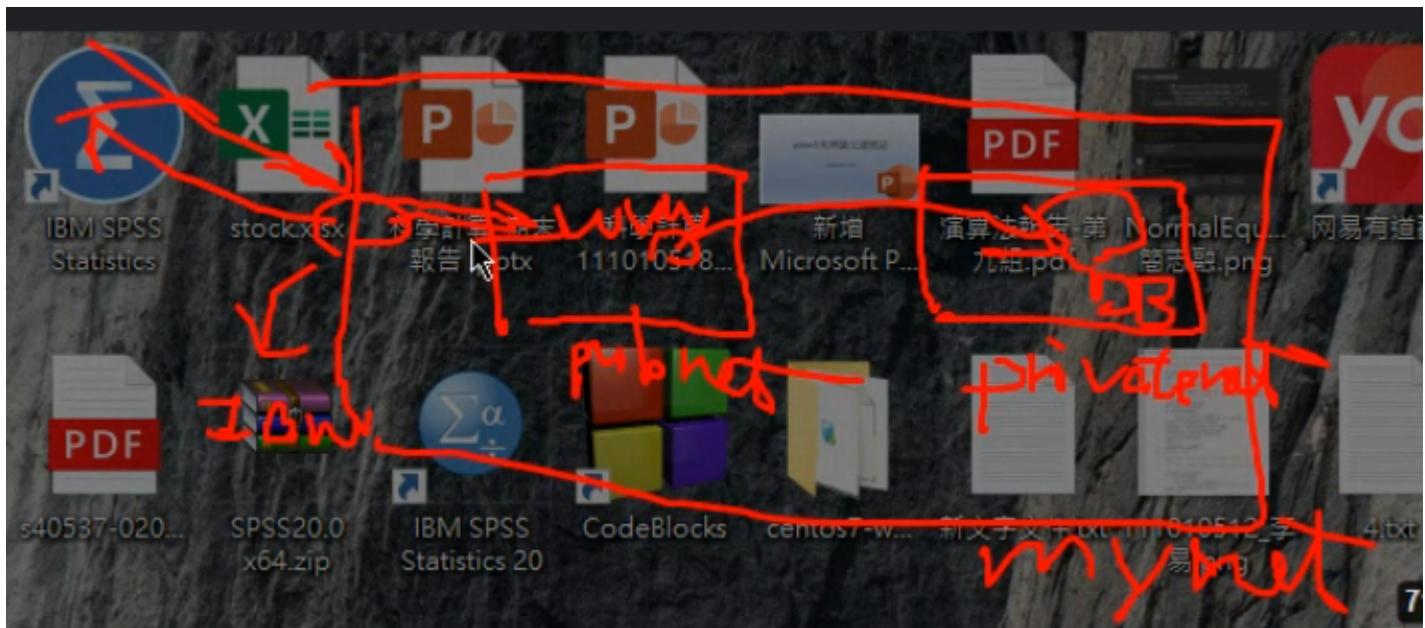
vpc : Network

並不是所有的機器都能面向大眾 會被盜用

資料庫都會放在私有網路

把網站放在公有網路

創造網路:



可以隔離網路，彼此不會互相影響，除了這些，這學期還會去講自動化的部分

手動的話：慢 管理維護較差

雲端的服務在世界上有很多中心

亞洲的歐洲連線就會比較慢，所以可能有複製資料的情形

判斷你在哪個地區，就能夠加快速度

自動化 json yml

這些配置檔配置好了就可以根據我們的設定來快速部署

無伺服器架構

serverless

重要的點是：有些人只Care可以提供多少服務，但他又不care配置

所以amazon就可以自動幫你配置，你只要提出需求就可以了，

雲端技術：k8s docker

aws在業界工作有經常使用到

所以學的aws比docker還要重要

期末沒有交筆記絕對被當掉喔!!!

操作的不好做不出來需要有老師的協助，所以要來!!

期中會出題目

老師比較Care筆記

把一些重要的過程加上說明加上圖

比較容易看到你整個學期學到甚麼東西

如果有這些筆記就比較容易去複習了

因為我有做這些東西，所以個人履歷就能夠展現出我的專業

aws架構師？

為什麼要學？

因為就業市場問你他在說甚麼的時候你可以說出來

AWS架構師/資深技術工程師 AWS Architect /Senior Technical Engineer 09/08更新

蓋亞資訊有限公司 本公司其他工作

工作內容

1. 設計和建立基於AWS平台的雲端架構，並確保它們能夠滿足客戶需求和業務需求。
2. 建立和管理虛擬機器、資料庫和其他雲端基礎架構，以確保它們能夠支持客戶應用程式和服務。
3. 設計和管理雲端網路架構，例如虛擬私有雲（VPC）、路由器、防火牆和VPN等。
4. 建立和管理AWS Infrastructure 如 S3, Transit Gateway, Network Firewall ... 等、AWS Database 如 AWS RDS, Aurora... 等。
5. 監控和調整AWS平台的性能，並解決任何性能問題和故障。
6. 解決客戶的技術問題和提供支援，並與其他團隊成員合作完成任務和項目。

職務類別 網路管理工程師、業務支援工程師、系統工程師

工作待遇 待遇面議（經常性薪資達 4 萬元或以上）⑦

工作性質 全職

上班地點 台北市內湖區瑞光路168號5樓之3 ⑨

管理責任 不需負擔管理責任

出差外派 離中差，一年累積時間未定

meet.google.com 下在共用你的畫面。 [停止共用](#) [關閉](#)

docker不是不講 是因為aws比較重要

第九週就是做練習

參考教材：

https://www.bilibili.com/video/BV1wR4y1F7YM/?p=1&vd_source=f74a220251f63c0d2381f8c51b2cbdee (課程相關影片)

Bilibili

001 Course Introduction - AWS Certified Solutions Architect Associate_哔哩哔哩_bilibili
001 Course Introduction - AViS Certified Solutions Architect Associate是P1【Udemy付费课程】Ulti...



上午 09:55 ✓

https://www.bilibili.com/video/BV16L4y177kj/?spm_id_from=333.788.recommend_more_video.0&vd_source=f74a220251f63c0d2381f8c51b2cbdee

Bilibili

P2【Udemy付费课程】Ultimate AWS Certified Solutions Architect Associate AWS认证课程 (...
P2【Udemy付费课程】Ultimate AWS Certified Solutions Architect Associate AWS认证课程 (中 ...



上午 09:55 ✓

首先要做就是註冊aws



註冊 AWS

探索包含新 AWS 帳戶的免費方案產品。

若要進一步瞭解，請造訪 aws.amazon.com/free。



根使用者電子郵件地址
用於帳戶復原和一些管理功能

AWS 帳戶名稱

為您的帳戶選擇名稱。註冊後，您可以在帳戶設定中變更此名稱。

驗證電子郵件地址

或

登入現有 AWS 帳戶

帳號具有最高的權限
所以不太會使用這個帳號
可能會開用戶帳號否則會造成資安的漏洞

login page



Sign in

Root user

Account owner that performs tasks requiring unrestricted access. [Learn more](#)

IAM user

User within an account that performs daily tasks. [Learn more](#)

Root user email address

kechihheng

Next

By continuing, you agree to the [AWS Customer Agreement](#) or other agreement for AWS services, and the [Privacy Notice](#). This site uses essential cookies. See our [Cookie Notice](#) for more information.

New to AWS?

Create a new AWS account

MACHINE LEARNING

Amazon CodeWhisperer

Build applications faster with the ML-powered coding companion

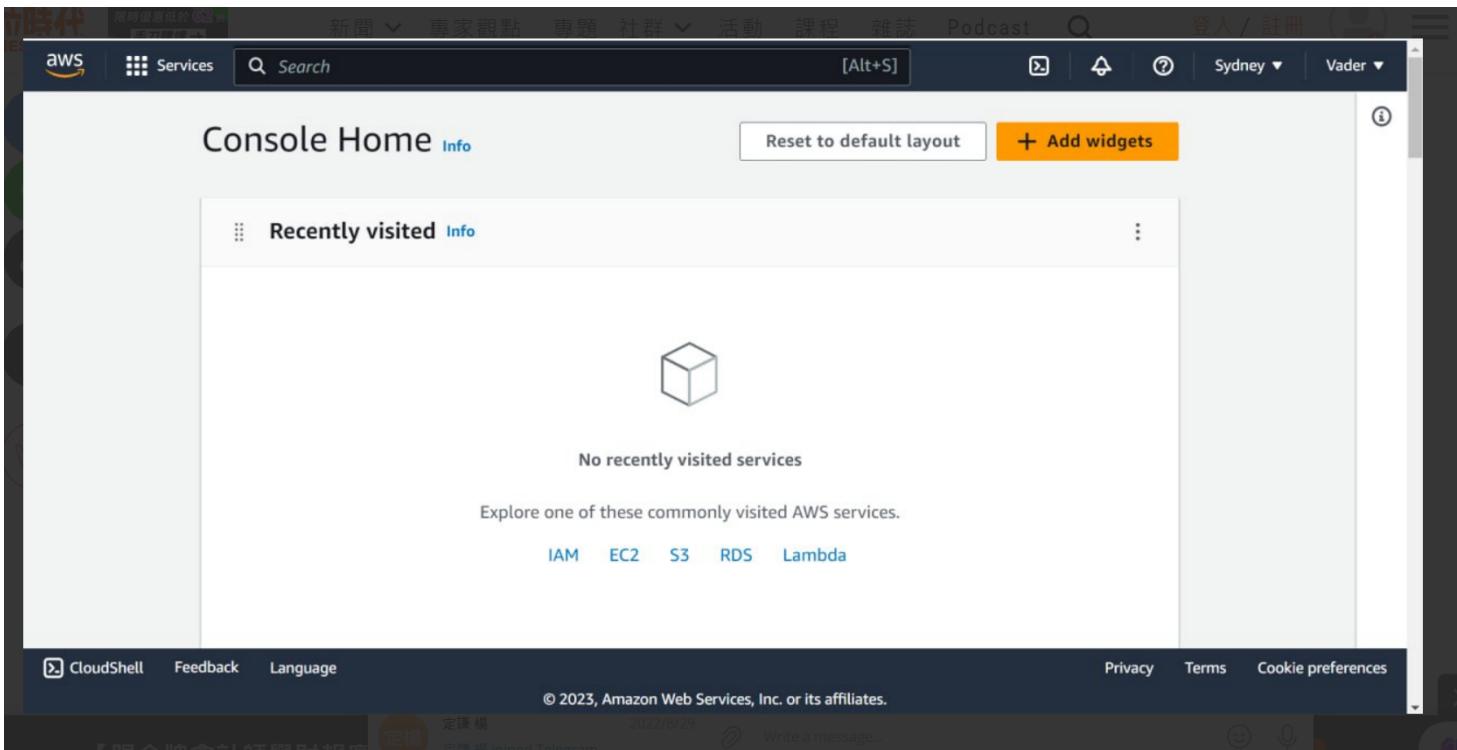
[Learn how >](#)



登入後:

The screenshot shows the AWS Console Home page. At the top, there's a navigation bar with tabs for Services, Search, and a user dropdown. Below the navigation is a "Recently visited" section listing services like CloudFormation, CloudFront, S3, RDS, Billing, EC2, VPC, and Global Accelerator. To the right, there are three main "Welcome to AWS" widgets: "Getting started with AWS" (with a rocket icon), "Training and certification" (with a graduation cap icon), and "What's new with AWS?" (with a lightbulb icon). A vertical toolbar on the far right provides quick access to various AWS features.

Home Page:



Can i have bill?

這多少錢？

EC2 DashBoard

The screenshot shows the AWS EC2 Dashboard. On the left, a sidebar lists various EC2-related services like Instances, Images, and Elastic Block Store. The main area has sections for 'Resources' (listing 0 instances, 0 auto scaling groups, etc.) and 'Account attributes' (listing the Default VPC). There are also sections for 'Launch instance', 'Service health', and 'Explore AWS'. A note at the bottom says 'Up to 40% better performance; 20% lower cost'.

為了不要付冤枉錢下課後把instance(實例)刪掉

The screenshot shows the AWS EC2 Home page. On the left, a sidebar menu includes 'EC2 Dashboard' (highlighted with a red box), 'EC2 Global View', 'Events', 'Instances' (with sub-options like Instances, Instance Types, Launch Templates, Spot Requests, Savings Plans, Reserved Instances, Dedicated Hosts, Capacity Reservations), 'Images' (with AMIs and AMI Catalog), and 'Snapshots'. The main content area displays 'Resources' with a grid of items: Instances (running) [0], Auto Scaling Groups [0], Dedicated Hosts [0], Elastic IPs [0], Instances [0], Key pairs [1], Load balancers [0], Placement groups [0], Security groups [4], Snapshots [0], and Volumes [0]. Below this is a 'Launch instance' section with 'Launch instance' and 'Migrate a server' buttons, and a note about launching instances in the US East (N. Virginia) Region. To the right, the 'Account attributes' section shows 'Default VPC' (vpc-0f4da99a235d4df9d) and 'Settings' (Data protection and security, Zones, EC2 Serial Console, Default credit specification, Console experiments). A 'Explore AWS' section promotes Graviton-based instances.

Elastic Compute Cloud (EC2)

The screenshot shows the AWS EC2 Instances page. The sidebar menu is identical to the previous screen. The main content area shows a table header for 'Instances Info' with columns: Name, Instance ID, Instance state, Instance type, Status check, Alarm status, Availability Zone, and Public IPv4 DNS. A search bar at the top says 'Find instance by attribute or tag (case-sensitive)'. Below the table, a message says 'No instances' and 'You do not have any instances in this region'. At the bottom, there is a 'Select an instance' section and a prominent 'Launch instances' button highlighted with a red arrow.

Launch an instance Info

Amazon EC2 allows you to create virtual machines, or instances, that run on the AWS Cloud. Quickly get started by following the simple steps below.

Name and tags Info

Name Add additional tags

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.

Recents | Quick Start

meet.google.com 正在共用你的畫面。 停止共用 請求

Summary

Number of instances Info 1

Software Image (AMI)
Amazon Linux 2023 AMI 2023.1.2... read more
ami-01c647eace872fc02

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

Cancel Launch instance Review commands

below

Recents | Quick Start

Amazon Linux macOS Ubuntu Windows Red Hat SUSE Li

Browse more AMIs
Including AMIs from AWS, Marketplace and the Community

Amazon Machine Image (AMI)

Amazon Linux 2023 AMI ami-01c647eace872fc02 / ami-0fdcbfc2802f642d3 (64-bit (Arm)) Virtualization: hvm Creation date: 2023-07-06 Root device type: ebs	Free tier eligible
--	--------------------

Description

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

Recents

Quick Start



Browse more AMIs

Including AMIs from AWS, Marketplace and the Community

Amazon Machine Image (AMI)

Ubuntu Server 22.04 LTS (HVM), SSD Volume Type

Free tier eligible

ami-053b0d53c279acc90 (64-bit (x86)) / ami-0a0c8eebcdd6dcbd0 (64-bit (Arm))

Virtualization: hvm ENA enabled: true Root device type: ebs

Description

Canonical, Ubuntu, 22.04 LTS, amd64 jammy image build on 2023-05-16

Architecture

AMI ID

我們比較常用到amazon的鏡像

它是免費的

之後就是挑作業系統

AMI amazon Machine Image

Instance type

有些是需要計算有些要儲存，根據需求來配置

t2.micro -> free

Instance type

t2.micro

Free tier eligible

Family: t2 1 vCPU 1 GiB Memory Current generation: true

On-Demand Windows base pricing: 0.0162 USD per Hour

On-Demand SUSE base pricing: 0.0116 USD per Hour

On-Demand RHEL base pricing: 0.0716 USD per Hour

On-Demand Linux base pricing: 0.0116 USD per Hour

Additional costs apply for AMIs with pre-installed software

給你最簡單的配置

t就是type 通常數字越高要付的錢就越多

c5.4xlarge

Family: c5 16 vCPU 32 GiB Memory Current generation: true

On-Demand Windows base pricing: 1.416 USD per Hour

On-Demand SUSE base pricing: 0.58 USD per Hour

On-Demand RHEL base pricing: 0.51 USD per Hour

On-Demand Linux base pricing: 0.68 USD per Hour

c代表 Cpu會比較強一點

在學習的時候使用免費的就好了，

職場的話則要求穩定

我們選t2.micro

key pair(login)

遠端登入到虛擬機，需要使用ssh連線

必須在這裡設定公鑰及私鑰

我們沒有鑰匙所以要點create key

Create key pair



Key pair name

Key pairs allow you to connect to your instance securely.

The name can include up to 255 ASCII characters. It can't include leading or trailing spaces.

Key pair type

RSA

RSA encrypted private and public key pair

ED25519

ED25519 encrypted private and public key pair

Private key file format

.pem

For use with OpenSSH

.ppk

For use with PuTTY



When prompted, store the private key in a secure and accessible location on your computer. You will need it later to connect to your instance. [Learn more](#)

Cancel

Create key pair

· 停止并用 隐藏

linux .pem

windows .ppk

我們選擇 .pem 因為我們比較常用 centos 跟 ubuntu

按下 generate

這個key要儲存起來，不要讓別人知道，否則會有問題，之後我們上課會用所以位置要記住

Network setting

我們會有一個預設的網路這個網路叫做 default

vpc -> default

在default裡面會有一個子網路

之後我們會把我的ec2建立在裡面

到時候ec2在裡面會有一個igw

internet gate way

ec2會透過 gate way雙向連接

這個部份我們先預設

auto assign public ip 要設定為 Enable

只需要設定這裡就好了，這裡是管理對外的Ip

接下來就是關於防火牆安全的部分

一種是 create security group

一種是 select existing security group

甚麼資料可以進來甚麼資料可以出去這就是security group

預設就是都不能進來，但是流出去可以

給他一個名稱叫做 sg-test

describe sg-test

設定ssh

source type

在aws裡 0.0.0.0/0 代表來自任何地方

如果今天我們想要製作一個網站就選擇

http 22 port and 80 port

Enable ▾

Firewall (security groups) Info

A security group is a set of firewall rules that control the traffic for your instance. Add rules to allow specific traffic to reach your instance.

Create security group Select existing security group

Security group name - *required*

sg-test

This security group will be added to all network interfaces. The name can't be edited after the security group is created. Max length is 255 characters. Valid characters: a-z, A-Z, 0-9, spaces, and ._-:/()#,@[]+=&{}!\$^

Description - *required* Info

sg-test

Inbound Security Group Rules

▼ Security group rule 1 (TCP, 22, 0.0.0.0/0)

Type Info ssh **Protocol Info** TCP **Port range Info** 22

Source type Info Anywhere **Source Info** Add CIDR, prefix list or security **Description - optional Info** e.g. SSH for admin desktop

0.0.0.0/0 X

安全我們開ssh and http

configure storage

根據不同的需求選擇儲存媒介

在右邊會有summary

你可以直接選擇你要開幾台

user data

如果你希望打開機就執行一些東西你就可以把腳本寫在這裡

下面會顯示第一年的優惠，

你不要真的覺得是750個小時，因為他是看全部虛擬機的總合的

好的時候

Instances (1/1) Info							
				Instance state		Actions	
						Launch instances	
Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	
test1	i-00c20432b132fb5a2	Running	t2.micro	-	No alarms	us-east-1a	

下面有個detail

狀態要是running

內部ip

外部ip

需要留意

右上角有個cloud shell 可以出現CLI

你在這邊就可以輸入linux還是你選擇的作業系統的指令

```
[cloudshell-user@ip-10-6-173-92 ~]$ ping 8.8.8.8
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.
^C
--- 8.8.8.8 ping statistics ---
12 packets transmitted, 0 received, 100% packet loss, time 11259ms

[cloudshell-user@ip-10-6-173-92 ~]$ █
```

好像沒有辦法ping

但我們現在已經通過power shell 連接到我們的 virtual machine

ifconfig 的指令找不到的話可能是你還沒有有安裝

有一個地方要修改

選擇instance id

security

Instances (1/1) Info							
				Instance state		Actions	
						Launch instances	
Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Publi
test1	i-00c20432b132fb5a2	Running	t2.micro	2/2 checks passed	No alarms	us-east-1a	ec2-5

選擇connect

EC2 > Instances > i-00c20432b132fb5a2

Instance summary for i-00c20432b132fb5a2 (test1) [Info](#)

Updated less than a minute ago

Instance ID: i-00c20432b132fb5a2 (test1)

Public IPv4 address: 54.242.219.117 [\[open address\]](#)

Private IPv4 addresses: 172.31.0.141

IPv6 address: -

Instance state: Running

Public IPv4 DNS: ec2-54-242-219-117.compute-1.amazonaws.com [\[open address\]](#)

Hostname type: IP name: ip-172-31-0-141.ec2.internal

Private IP DNS name (IPv4 only): ip-172-31-0-141.ec2.internal

Answer private resource DNS name: -

Instance type: t2.micro

Elastic IP addresses: -

Auto-assigned IP address: 54.242.219.117 [Public IP]

VPC ID: vpc-0f4da99a235d4df9d (default) [\[Details\]](#)

AWS Compute Optimizer finding: [Opt-in to AWS Compute Optimizer for recommendations](#)

EC2 Instance Connect [Session Manager](#) [SSH client](#) [EC2 serial console](#)

Instance ID: i-00c20432b132fb5a2 (test1)

Connection Type:

Connect using EC2 Instance Connect
Connect using the EC2 Instance Connect browser-based client, with a public IPv4 address.

Connect using EC2 Instance Connect Endpoint
Connect using the EC2 Instance Connect browser-based client, with a private IPv4 address and a VPC endpoint.

Public IP address: 54.242.219.117

User name: ec2-user

Note: In most cases, the default user name, ec2-user, is correct. However, read your AMI usage instructions to check if the AMI owner has changed the default AMI user name.

Cancel **Connect**

The screenshot shows a terminal window within the AWS CloudShell interface. The title bar includes links to Jan Ho's network world, 簡明 Linux Shell Sc..., ecampus, GitHub - wojjushix..., se, and a search bar with the placeholder 'Search' and a keyboard shortcut '[Alt+S]'. Below the title bar is a navigation bar with icons for EC2, VPC, S3, RDS, CloudFront, Lambda, API Gateway, CloudWatch, CloudTrail, IAM, and Route 53. The main terminal area displays a multi-line banner for Amazon Linux 2023, followed by the URL <https://aws.amazon.com/linux/amazon-linux-2023>. Below the banner, the terminal shows the user's last login information: 'Last login: Tue Sep 12 12:22:26 2023 from 18.206.107.27 [ec2-user@ip-172-31-0-141 ~]\$'. The bottom right corner of the terminal has three small circular icons: a magnifying glass, a gear, and three dots.

```
Amazon Linux 2023
https://aws.amazon.com/linux/amazon-linux-2023
Last login: Tue Sep 12 12:22:26 2023 from 18.206.107.27
[ec2-user@ip-172-31-0-141 ~]$
```

連接到虛擬機，剛剛做的有些錯誤

虛擬機已經可以去ping外網

公有ip也可以被windows ping到?(不行)

ICMP沒有開啟 外網不能夠連進去

SECURITY GROUP

如果想要讓他可以PING

點選這個

第二步在這裡

接下來開啟ICMP

ALL ICMP -> SAVE

應該就沒什麼問題了

終止的話就點選虛擬機

TERMINATE INSTANCE

選擇 TERMINATE

等一下就可以看到刪掉了0