

給初學者的 AWS 教學 - 建立 EC2

小賴

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目標：給完全沒有 Linux / 雲端 (AWS, Azure, GCP) 經驗的初學者體驗 EC2 / Linux 的動手實驗。

Agenda

- AWS EC2 簡介
 - Lab: 建立 EC2 instance 與連線
- 移除實驗建立的資源

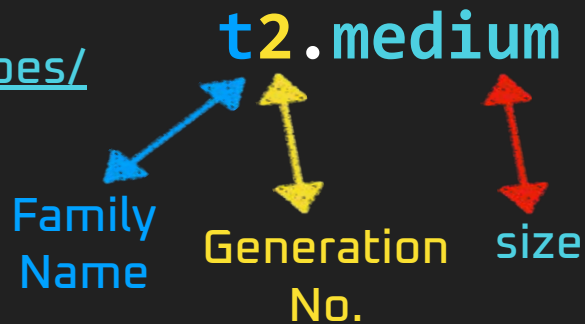
AWS EC2 簡介

Amazon EC2

- Amazon Elastic Compute Cloud
- AWS 提供的服務, 可快速(幾分鐘內)搭建虛擬伺服器
 - 建立出來的伺服器稱為實例(instance)
- 具有 99.99% 的可用性
- 文件: <https://aws.amazon.com/tw/ec2>

虛擬伺服器的種類

<https://aws.amazon.com/tw/ec2/instance-types/>



	General Purpose	Comute Optimized	Memory Optimized	Accelerated Computing	Storage Optimized	HPC Optimized
Instance Types	T2, T3, M4, M5,...	C4, C5, C6a,...	R4, R5a, R6a, X1,...	P4, P5, G5, F1,...	D2, I3, H1,...	Hpc6a, Hpc7a,...
Use Cases	Broad	High Performance	In-memory database	Machine Learning	Distributed File Systems	HPC workloads

EC2 計價模型

- On-Demand instances
- Reserved instances
 - 類似預付的概念, 可達 6-7 折
- Spot instances
 - 預留 20% 主機來競標
 - 價格低廉, 可節省 90% 的費用, 但標到後要立刻使用
 - 會被收回: 出價被超過時會被收回 -> 可中斷的任務

建立 EC2 instance 的步驟 (1)

- 決定 instance 要建立在哪個 Region (區域)
 - 例如: 東京 ap-northeast-1、美東維吉尼亞 us-east-1
- Region 之下又有 AZ (availability zone, 可用區域)
 - Region 內獨立的區域, 水電隔離 -> 高可用
 - Region 內 AZ 之間私有光纖網路連結 -> 低延遲

建立 EC2 instance 的步驟 (2)

- 選擇 Amazon Machine Image (AMI)
 - 可以想成是選擇「作業系統」
 - 用來啟動 EC2 instance
 - 來源：自建、共享、購買
- 選擇 Instance Type
 - 主機規格
 - 根據自己的使用情境與需求來選擇

建立 EC2 instance 的步驟 (3)

- 設定網路、安全組 (Security Group)、儲存
 - 網路設定 VPC (Virtual Private Cloud)
 - 虛擬網路，可以藉由配置不同的子網路 (subnet) 來達成公有網路、私有網路等規劃
 - 安全組 Security Group
 - 虛擬防火牆，控制傳入與流出量

Lab : 建立 EC2 instance 與連 線

LAB: 啟動 EC2 instance

Step 1: 進入 EC2 Console

1. 選擇區域 Region

The screenshot shows the AWS Management Console search bar at the top. The search bar contains the text 'EC2'. To the right of the search bar, the region 'Oregon' is selected. Below the search bar, the search results for 'EC2' are displayed. The results are categorized into 'Services (13)', 'Features (53)', 'Resources (New)', 'Blogs (2,018)', 'Documentation (32,967)', 'Knowledge Articles (20)', 'Tutorials (21)', 'Events (30)', and 'Marketplace (2,565)'. The 'Services' section is expanded, showing a list of services. The first service listed is 'EC2', which is highlighted with a blue box. The description for 'EC2' is 'Virtual Servers in the Cloud'. The second service listed is 'EC2 Image Builder', and the third is 'Recycle Bin'.

2. 在上方的搜尋框輸入 EC2

3. 在搜尋結果點擊 EC2

LAB: 啟動 EC2 instance

Step 2: 進入 EC2 Console, 準備啟動 EC2 實例

2. 點擊 Launch instances

The screenshot shows the AWS Management Console for the EC2 service. The left sidebar contains the navigation menu with the following items: EC2 Dashboard, EC2 Global View, Events, Instances (expanded), Instance Types, Launch Templates, Spot Requests, and Savings Plans. The 'Instances' item is highlighted with a red box. The main content area is titled 'Instances' and includes a search bar, a refresh button, and buttons for 'Connect', 'Instance state', 'Actions', and 'Launch instances'. The 'Launch instances' button is highlighted with a red box. Below these buttons is a table with columns: Name, Instance ID, Instance state, Instance type, Status check, and Alarm status. The table is currently empty, displaying the message 'No instances' and 'You do not have any instances in this region'. A 'Launch instances' button is also present at the bottom of the table area.

1. 左邊選單選擇 instances

LAB: 啟動 EC2 instance

Step 3: instance 命名

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](#)

幫你的 instance 取個名字

Name

e.g. My Web Server

[Add additional tags](#)

LAB: 啟動 EC2 instance

Step 4: 選擇 AMI

▼ Application and OS Images (Amazon Machine Image) [Info](#)

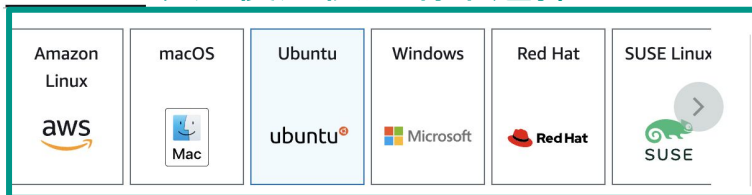
搜尋想要用的 AMI

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

或是使用快速清單選擇



🔍
[Browse more AMIs](#)
Including AMIs from
AWS, Marketplace and
the Community

Amazon Machine Image (AMI)

Ubuntu Server 22.04 LTS (HVM), SSD Volume Type
ami-03f65b8614a860c29 (64-bit (x86)) / ami-0c79a55dda52434da (64-bit (Arm))
Virtualization: hvm ENA enabled: true Root device type: ebs

Free tier eligible ▼

Description

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

Architecture

64-bit (x86) ▼

AMI ID

ami-03f65b8614a860c29

Verified provider

LAB: 啟動 EC2 instance

Step 5: 選擇 Instance type

▼ Instance type Info

AWS 帳號第一年會有 free tier (免費額度), 除非特殊需求, 不然可以先用 free tier 等。

Instance type

t2.micro

Free tier eligible

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

On-Demand Linux base pricing: 0.0116 USD per Hour

On-Demand SUSE base pricing: 0.0116 USD per Hour

On-Demand Windows base pricing: 0.0162 USD per Hour

On-Demand RHEL base pricing: 0.0716 USD per Hour

☐ All generations

[Compare instance types](#)

Additional costs apply for AMIs with pre-installed software

免費額度參考網址: <https://aws.amazon.com/free/>

LAB: 啟動 EC2 instance

Step 6: 選擇或建立 key pair

▼ Key pair (login) Info

這是用來 SSH 進主機的 key, 務必保管好,
不要弄丟、不要被偷走。

You can use a key pair to securely connect to your instance. Ensure that you have access to the selected key pair before you launch the instance.

Key pair name - *required*

Select

沒有建立過的話, 可以點擊 create new
key pair 建立 key pair

▼

↻ Create new key pair

LAB: 啟動 EC2 instance

Step 6-1: 建立 key pair

Create key pair

輸入 key 的名稱

Key pair name

Key pairs allow you to connect to your instance securely.

Enter key pair name

The name can include upto 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

如果選擇建立新的key pair, 就會看到這個跳出視窗。

AWS 官網提醒:



Windows 執行個體不支援 ED25519 金鑰。

點擊 Create key 就會下載一個新的key, 務必保管好, 不要弄丟、不要被偷走。

LAB: 啟動 EC2 instance

Step 7: 網路設定 (1)

▼ Network settings [Info](#)

[Edit](#)

Network [Info](#)

這邊是網路設定，維持預設即可。

vpc-0276bbb1f2722d6c8

Subnet [Info](#)

No preference (Default subnet in any availability zone)

Auto-assign public IP [Info](#)

Enable

LAB: 啟動 EC2 instance

Step 8: 網路設定 (2) Security Group 安全組

Firewall (security groups) Info 如果已經建立過, 可以選擇已經存在的security group
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

We'll create a new security group called 'launch-wizard-1' with the following rules:

☒ Allow SSH traffic from

Helps you connect to your instance

Anywhere

0.0.0.0/0

☐ Allow HTTPS traffic from the internet

To set up an endpoint, for example when creating a web server

☒ Allow HTTP traffic from the internet

To set up an endpoint, for example when creating a web server

沒有建立過的話, 可以選擇建立, 這邊勾選你允許的網路流量。
(建議勾選 SSH 與 HTTP)



Rules with source of 0.0.0.0/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.



LAB: 啟動 EC2 instance

Step 9: 其他部分維持預設即可

選單拉至最下方，可以看到Launch instance 的按鈕，點擊按鈕後，AWS 就會開始按照你的設定建立EC2 instance。

Launch instance

Review commands

EC2 > [Instances](#) > Launch an instance

✓ Success

Successfully initiated launch of instance (i-06216dc797878e11f)

► Launch log

畫面拉至最下方，點擊此按鈕

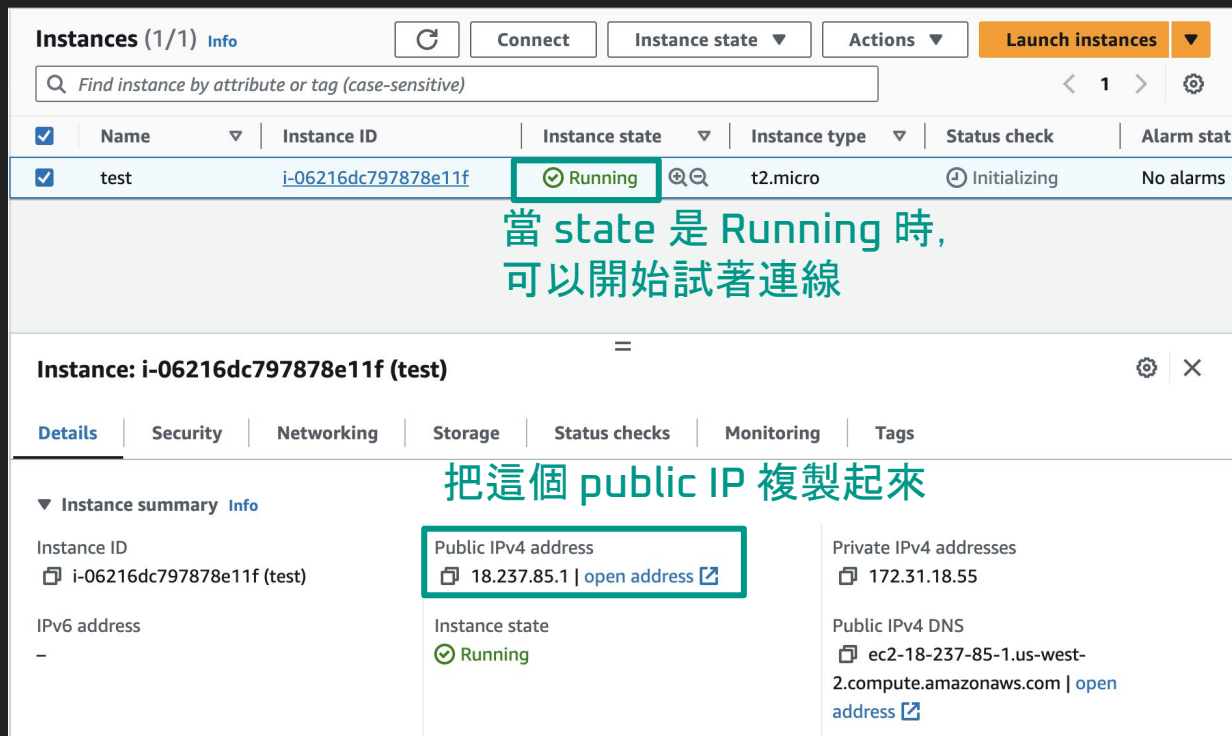
Next Steps

Q What would you like to do next with this instance, for example "create alarm" or "create backup"

View all instances

LAB: 啟動 EC2 instance

Step 10: 檢視 instance 資訊



Instances (1/1) [Info](#) [Refresh](#) [Connect](#) [Instance state](#) [Actions](#) [Launch instances](#)

Find instance by attribute or tag (case-sensitive) < 1 > [Settings](#)

<input checked="" type="checkbox"/>	Name	Instance ID	Instance state	Instance type	Status check	Alarm state
<input checked="" type="checkbox"/>	test	i-06216dc797878e11f	Running	t2.micro	Initializing	No alarms

當 state 是 Running 時，
可以開始試著連線

Instance: i-06216dc797878e11f (test) [Settings](#) [Close](#)

[Details](#) [Security](#) [Networking](#) [Storage](#) [Status checks](#) [Monitoring](#) [Tags](#)

▼ Instance summary [Info](#)

Instance ID i-06216dc797878e11f (test)	Public IPv4 address 18.237.85.1 open address	Private IPv4 addresses 172.31.18.55
IPv6 address -	Instance state Running	Public IPv4 DNS ec2-18-237-85-1.us-west-2.compute.amazonaws.com open address

把這個 public IP 複製起來

LAB: 啟動 EC2 instance

Step 11: SSH 連線 - 以 Mac 為例

(1) Step 6 下載的 key, 記得先修改權限

```
chmod 400 xxx.pem
```

(2) 開始進行連線, 登入的帳號跟選擇的 AMI 有關, 如果是 Ubuntu 的話, 預設的使用者是 ubuntu, 如果是 Amazon Linux 的話, 會是 ec2-user。

```
ssh -i {key path} {user name}@{public-ip}
```

大括號的地方換成你的資料, 例如:

```
ssh -i ~/.ssh/lightda-aws-oregon.pem ubuntu@18.237.85.1
```

LAB: 啟動 EC2 instance

Step 11: SSH 連線 - 以 Mac 為例

```
ssh -i ~/.ssh/lightda-aws-oregon.pem ubuntu@18.237.85.1
```

```
The authenticity of host '18.237.85.1 (18.237.85.1)' can't be established.  
ECDSA key fingerprint is SHA256:KtuchHfFdCD0pmBLAL+Gv10PdQ7Xvj6oBeZKZRpadVkJ.  
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes  
Warning: Permanently added '18.237.85.1' (ECDSA) to the list of known hosts.  
Welcome to Ubuntu 22.04.2 LTS (GNU/Linux 5.19.0-1025-aws x86_64)
```

填 yes

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

```
System information as of Tue Sep  5 09:22:32 UTC 2023
```

```
System load:  0.0      Processes:            96  
Usage of /:   20.6% of 7.57GB  Users logged in:    0  
Memory usage: 23%      IPv4 address for eth0: 172.31.18.55  
Swap usage:   0%
```

```
ubuntu@ip-172-31-18-55:~$
```

→ 看到提示命令, 表示成功連線至EC2 了

LAB: 啟動 EC2 instance

Step 11: SSH 連線 for Windows

參考官網教學：

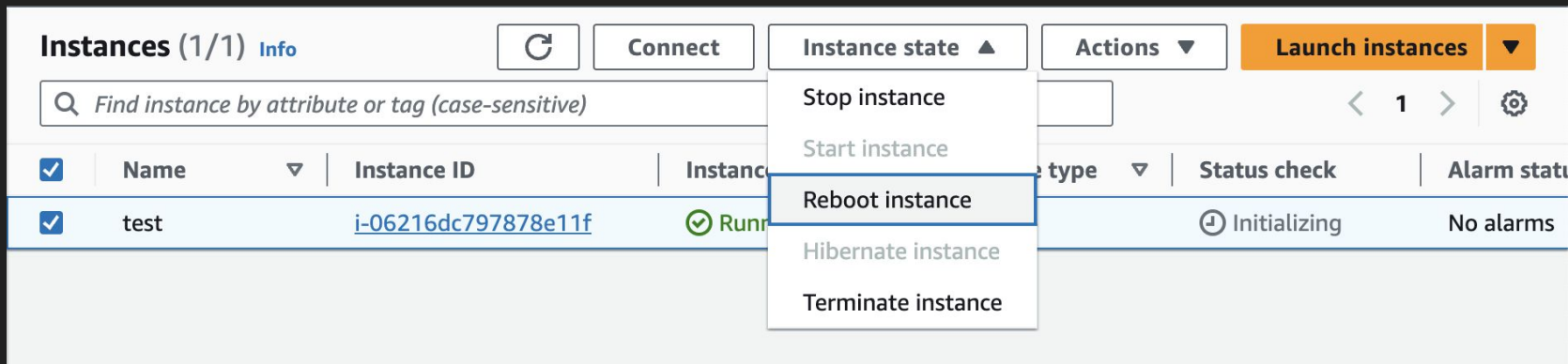
https://docs.aws.amazon.com/zh_tw/AWSEC2/latest/UserGuide/connect-linux-inst-from-windows.html

移除 instance

移除 EC2 instance

選擇 Terminate instance

如果選擇 stop, 則只會停機, 而不是移除。



可以實驗看看: 選擇 stop、關機後、再重新 start

參考資料

- https://docs.aws.amazon.com/zh_tw/AWSEC2/latest/UserGuide/connect-linux-inst-ssh.html
- https://docs.aws.amazon.com/zh_tw/AWSEC2/latest/UserGuide/EC2_GetStarted.html