

Lab: 建立 docker 映像檔-修改現有映像檔

請開啟終端機 (於桌面上按滑鼠右鍵 -- > 使用終端機開啟)

如果是用 一般使用者登入, 請使用 `> su` - 輸入密碼來切換管理者 root
管理者的提示符號是 `#`

建立 container

```
# docker run -it suse/sles12sp1 /bin/bash
```

使用 rpm 指令查詢關鍵字 ssh

```
bash-4.2# rpm -qa | grep ssh
libssh2-1-1.4.3-19.1.x86_64
```

於 Container 內新增 openssh 套件, 使用 非互動方式

```
bash-4.2# zypper -n install openssh
Refreshing service 'container-suseconnect'.
Adding repository 'SLES12-SP1-Debuginfo-Pool for sle-12-x86_64' .....[done]
Adding repository 'SLES12-SP1-Debuginfo-Updates for sle-12-x86_64' .....[done]
Adding repository 'SLES12-SP1-Pool for sle-12-x86_64' .....[done]
Adding repository 'SLES12-SP1-Source-Pool for sle-12-x86_64' .....[done]
Adding repository 'SLES12-SP1-Updates for sle-12-x86_64' .....[done]
Building repository 'SLES12-SP1-Pool for sle-12-x86_64' cache .....[done]
Retrieving repository 'SLES12-SP1-Updates for sle-12-x86_64' metadata .....[done]
Building repository 'SLES12-SP1-Updates for sle-12-x86_64' cache .....[done]
Loading repository data...
Reading installed packages...
Resolving package dependencies...
```

The following 3 NEW packages are going to be installed:

libedit0 libncurses6 openssh

```
bash-4.2# rpm -qa | grep ssh
libssh2-1-1.4.3-19.1.x86_64
openssh-6.6p1-52.1.x86_64
```

另外開終端機進行操作

```
# docker ps
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
3e042f7b12ad	suse/sles12sp1	"/bin/bash"	6 minutes ago	Up 6 minutes	kickass_meninsky	

使用 docker commit 指令建立 image

```
# docker commit -m "Add openssh" -a "sakana" 3e042f7b12ad testrepo/testimage:vTEST
sha256:60059db67cc0cd0b168ee52d20b47002a4956db0b0661f49e8f3b976475ffab9
```

- commit 提交一個新的 image
- -m 訊息 Commit message
- -a 作者 Author
- 3e042f7b12ad 是 container ID
- testrepo/testimage:vTEST 是 Repository 名稱/映像檔名稱:TAG

在 Container 內

bash-4.2# exit

觀察 docker images

docker images

REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
testrepo/testimage	vTEST	60059db67cc0	4 minutes ago	124 MB
suse/sles12sp1	1.0.5	d8d6ca91ecd7	41 minutes ago	98.88 MB
suse/sles12sp1	latest	d8d6ca91ecd7	41 minutes ago	98.88 MB
opensuse	42.1	63c4e5e0fa49	2 weeks ago	95.73 MB
opensuse	latest	63c4e5e0fa49	2 weeks ago	95.73 MB
busybox	latest	e02e811dd08f	3 weeks ago	1.093 MB
sakana/sshd	latest	c96ecaaba6c9	10 months ago	329.4 MB

Lab: 建立 docker 映像檔-使用 Dockerfile

透過 docker build 指令來建立映像檔

首先觀察目前的路徑

pwd

/root

建立工作目錄

mkdir sakana

進入該目錄

cd sakana/

建立 Dockerfile (請注意檔案名稱大小寫)

可以使用 vi 或是 gedit (圖形介面工具)

vi Dockerfile

用於註解

後續的流程, 前面都要大寫

FROM 基於那個 image

FROM suse/sles12sp1

```
# MAINTAINER 維護作者
MAINTAINER Max Huang < sakana@study-area.org >
```

```
# RUN 要執行的指令
# 每一行就是一個 image layer, 儘量將同一種行為放同一行 使用 && 來連接
RUN zypper -n install openssh
```

使用 docker build 指令建立 image
這邊 最後面是 Dockerfile 所在目錄, 這邊使用 . 目前目錄來指定, 也可以使用絕對路徑 (/root/sakana)

```
# docker build -t testrepo/buildimage .
Sending build context to Docker daemon 2.048 kB
Step 1 : FROM suse/sles12sp1
--> d8d6ca91ecd7
Step 2 : MAINTAINER Max Huang < sakana@study-area.org >
--> Running in 6e06341bd64e
--> 3fb593718935
Removing intermediate container 6e06341bd64e
Step 3 : RUN zypper -n install openssh
--> Running in b7db479b74f6
Refreshing service 'container-suseconnect'.
```

- -t 是 tag 後面為 repository名稱/image名稱
- 路徑為 Dockerfile 所在目錄, 跟他上層目錄叫啥名字沒有關係...

觀察docker images

```
# docker images
```

REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
testrepo/buildimage	latest	792a9959a3ba	2 minutes ago	124 MB
testrepo/testimage	vTEST	60059db67cc0	17 minutes ago	124 MB
suse/sles12sp1	1.0.5	d8d6ca91ecd7	55 minutes ago	98.88 MB
suse/sles12sp1	latest	d8d6ca91ecd7	55 minutes ago	98.88 MB
opensuse	42.1	63c4e5e0fa49	2 weeks ago	95.73 MB
opensuse	latest	63c4e5e0fa49	2 weeks ago	95.73 MB
busybox	latest	e02e811dd08f	3 weeks ago	1.093 MB
sakana/sshd	latest	c96ecaaba6c9	10 months ago	329.4 MB

Lab: 映像檔管理 - Tag 與刪除映像檔

設定映像檔 Tag

可以透過 docker tag 設定映像檔的TAG

觀察映像檔

```
# docker images
```

REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
testrepo/buildimage	latest	792a9959a3ba	6 minutes ago	124 MB
testrepo/testimage	vTEST	60059db67cc0	22 minutes ago	124 MB
suse/sles12sp1	1.0.5	d8d6ca91ecd7	59 minutes ago	98.88 MB
suse/sles12sp1	latest	d8d6ca91ecd7	59 minutes ago	98.88 MB
opensuse	42.1	63c4e5e0fa49	2 weeks ago	95.73 MB
opensuse	latest	63c4e5e0fa49	2 weeks ago	95.73 MB
busybox	latest	e02e811dd08f	3 weeks ago	1.093 MB
sakana/sshd	latest	c96ecaaba6c9	10 months ago	329.4 MB

使用 docker tag 指令建立 TAG

```
# docker tag 792a9959a3ba testrepo/buildimage:tagTest
```

觀察映像檔

```
# docker images
```

REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
testrepo/buildimage	latest	792a9959a3ba	9 minutes ago	124 MB
testrepo/buildimage	tagTest	792a9959a3ba	9 minutes ago	124 MB
testrepo/testimage	vTEST	60059db67cc0	24 minutes ago	124 MB
suse/sles12sp1	1.0.5	d8d6ca91ecd7	About an hour ago	98.88 MB
suse/sles12sp1	latest	d8d6ca91ecd7	About an hour ago	98.88 MB
opensuse	42.1	63c4e5e0fa49	2 weeks ago	95.73 MB
opensuse	latest	63c4e5e0fa49	2 weeks ago	95.73 MB
busybox	latest	e02e811dd08f	3 weeks ago	1.093 MB
sakana/sshd	latest	c96ecaaba6c9	10 months ago	329.4 MB

移除映像檔

如果要移除映像檔, 必須沒有作用中的 container 才可以移除

觀察 container

目前 busybox 沒有 container 使用中, opensuse 有 container 使用中

```
# docker ps
```

```
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
```

```
# docker ps -a
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
3e042f7b12ad	suse/sles12sp1	"/bin/bash"	35 minutes ago	Exited (0) 15 minutes ago	kickass_meninsky	
bb8f3955a8d3	opensuse	"/bin/bash"	About an hour ago	Exited (0) About an hour ago	sleepy_turing	
7fb20f47f816	opensuse	"/bin/bash"	About an hour ago	Exited (0) About an hour ago	lonely_sinoussi	
77a267d22e24	opensuse	"/bin/bash"	About an hour ago	Exited (137) 28 minutes ago	pedantic_yonath	

首先嘗試 移除 busybox 映像檔

```
# docker rmi busybox
```

```
Untagged: busybox:latest
```

Deleted: b41c5284db849fbc4d486094a8896ba46a470f9d397ddec08e8a3d5dd4b725cd
Deleted: a5d4c53980c6aec4758bfea6b0cc90938ec253c3758a8b6b345a0d37cc7b35cb

觀察映像檔

docker images

REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
testrepo/buildimage	latest	792a9959a3ba	14 minutes ago	124 MB
testrepo/buildimage	tagTest	792a9959a3ba	14 minutes ago	124 MB
testrepo/testimage	vTEST	60059db67cc0	29 minutes ago	124 MB
suse/sles12sp1	1.0.5	d8d6ca91ecd7	About an hour ago	98.88 MB
suse/sles12sp1	latest	d8d6ca91ecd7	About an hour ago	98.88 MB
opensuse	42.1	63c4e5e0fa49	2 weeks ago	95.73 MB
opensuse	latest	63c4e5e0fa49	2 weeks ago	95.73 MB
sakana/sshd	latest	c96ecaaba6c9	10 months ago	329.4 MB

接下來嘗試刪除 有 container 執行的 image

docker rmi opensuse:42.1

Error response from daemon: conflict: unable to remove repository reference "opensuse:42.1" (must force) - container f4b981edble5 is using its referenced image 80bd0f661aef
Error: failed to remove images: [opensuse:42.1]

因為 container 仍然使用中所以不能刪除

觀察 container

docker ps -a

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
f4b981edble5	80bd0f661aef	"/bin/bash"	13 hours ago	Exited (0)	34 minutes ago	sleepy_bhabha
3965b5144bdf	80bd0f661aef	"/bin/bash"	13 hours ago	Exited (0)	13 hours ago	elegant_brown
1dd047e1ec6b	80bd0f661aef	"/bin/bash"	13 hours ago	Exited (0)	13 hours ago	thirsty_archimedes

透過 docker rm 來移除container

docker rm f4b981edble5
f4b981edble5

觀察 container

docker ps -a

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
3965b5144bdf	80bd0f661aef	"/bin/bash"	13 hours ago	Exited (0)	13 hours ago	elegant_brown
1dd047e1ec6b	80bd0f661aef	"/bin/bash"	13 hours ago	Exited (0)	13 hours ago	thirsty_archimedes

一個一個刪除 container 有時候在實驗環境有點麻煩

所以就把腦筋動到一次刪除所有的 container

docker ps 指令加上 -q 只會列出 container ID

docker ps -aq

3965b5144bdf
1dd047e1ec6b

但是做這件事的時候要三思而後行

(會刪除所有的container, 會刪除所有的container, 會刪除所有的container)

```
# docker rm $(docker ps -a -q)
```

3965b5144bdf
1dd047e1ec6b

觀察 container

```
# docker ps -a
```

CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES

接下來就可以將沒有 container 使用中的 image 刪除了

如果是正在執行的 container, 必須先 #docker stop <container id> 才刪除