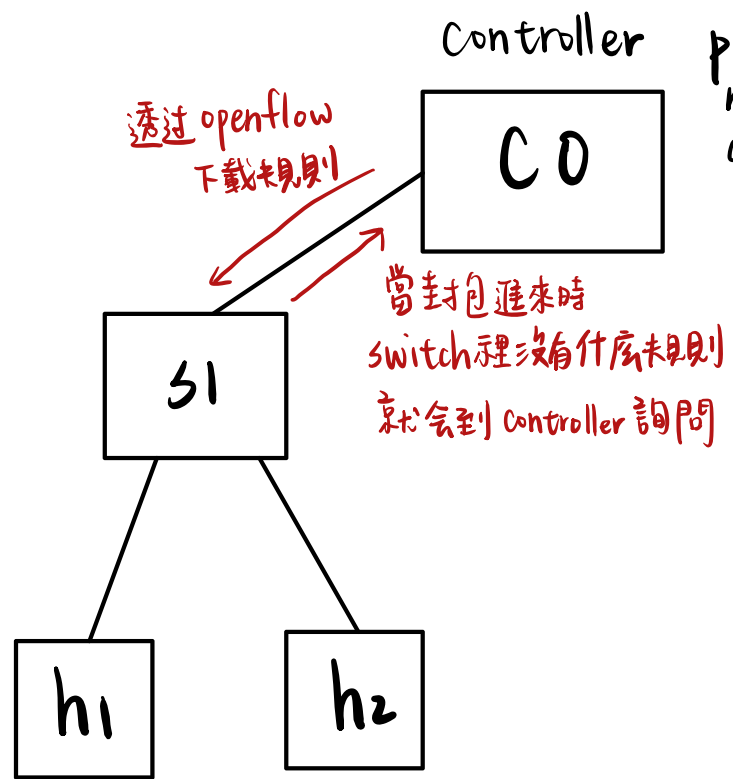


SDN



pox (python)  
nox (C++)  
onos (java)  
ryu (python)  
open day light (java)

```
/mininet-wifi/example# python3 miniedit.py
```

設定 CO Type : Remote Controller

```
new # cd /home/user/pox/ext
terminal # gedit test.py
```

```
/test # python 3.py
```

```
> sh ovs-ofctl dump-flows s1
> h1 ping h2
x
```

new 上一層執行  
terminal # cd ..  
# ./pox.py test

> sh ovs-ofctl dump-flows s1

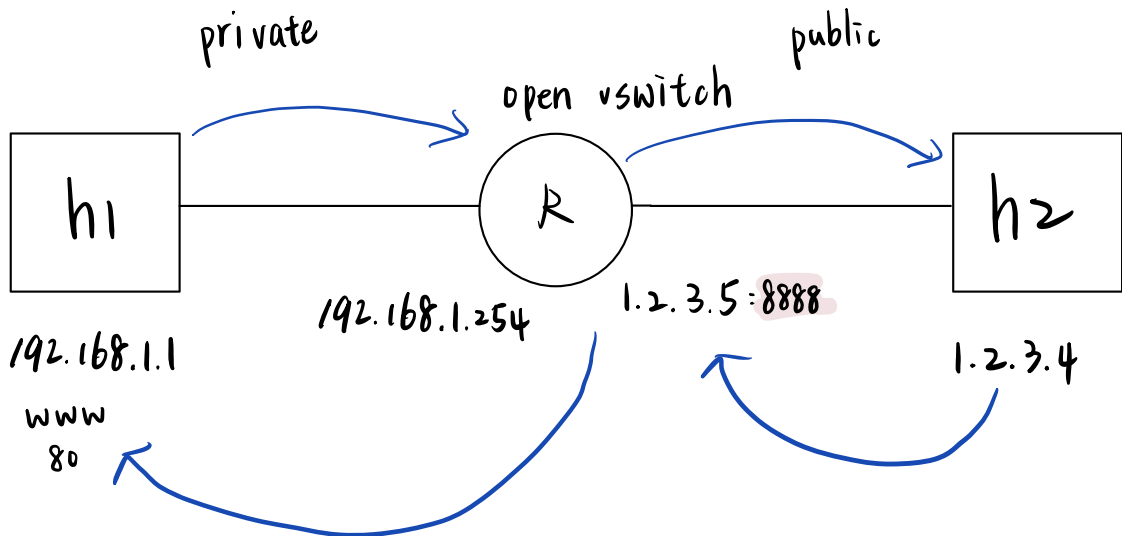
> h1 ping h2  
✓

test.py

idle-timeout = 10

10 sec 後, 規則就會不見

DNAT = port forwarding



# python z.py

> sh ovs-ofctl dump-flows s1

> sh ovs-ofctl add-flow s1 tcp, nw\_src = 192.168.1.1, nw\_dst = 1.2.3.4,  
tp\_src = 80, actions = mod\_nw\_src = 1.2.3.5, mod\_dl\_dst = 00:00:00:00:00:02,  
mod\_tp\_src = 8888, output: 2

> sh ovs-ofctl add-flow s1 tcp, nw\_src = 1.2.3.4, nw\_dst = 1.2.3.5,  
tp\_dst = 8888, actions = mod\_nw\_dst = 192.168.1.1, mod\_dl\_dst = 00:00:00:00:00:01,  
mod\_tp\_dst = 80, output: 1

> sh ovs-ofctl dump-flows s1

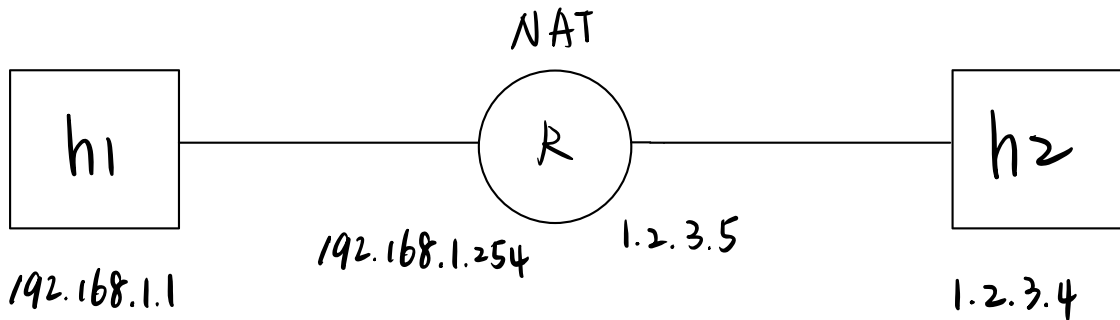
> xterm h1 h2

h1  
# python -m SimpleHTTPServer 80

h2  
# arp -n  
# curl 1.2.3.5:8888

## Firewall

1. h1 ping h2
  2. h1 可以連 h2:80
  3. h1 不可以連 h2:8080
- private



# python z.py

WWW  
80, 8080

滿足  
h1 ping  
h2

- > sh ovs-ofctl dump-flows s1
- > sh ovs-ofctl add-flows s1 priority=10, ip,nw\_src=192.168.1.1, nw\_dst=1.2.3.4  
actions=mod\_nw\_src=1.2.3.5, mod\_dl\_dst=00:00:00:00:00:02, output:2
- > sh ovs-ofctl add-flows s1 priority=10, ip,nw\_src=1.2.3.4, nw\_dst=1.2.3.5  
actions=mod\_nw\_dst=192.168.1.1, mod\_dl\_dst=00:00:00:00:00:01, output:1
- > sh ovs-ofctl dump-flows s1

> xterm h1 h2 h2

```
h2
# python -m SimpleHTTPServer 80
h2
# python -m SimpleHTTPServer 8080
```

```
h1
# ping 1.2.3.4
✓
```

滿足  
連到  
h2:80

```
> sh ovs-ofctl add-flows s1 priority=100,tcp,nw_src=192.168.1.1,nw_dst=1.2.3.4,
    ,tp_dst=80, actions=mod_nw_src=1.2.3.5,mod_dl_dst=00:00:00:00:00:02,output:2
> sh ovs-ofctl add-flows s1 priority=100,tcp,nw_src=1.2.3.4,nw_dst=1.2.3.5,
    ,tp_src=80, actions=mod_nw_src=192.168.1.1,mod_dl_dst=00:00:00:00:00:01,output:1
> sh ovs-ofctl dump-flows s1
```

```
h1
# curl http://1.2.3.4
```

滿足  
連不到  
h2:8080

```
> sh ovs-ofctl add-flows s1 priority=100,tcp,nw_src=192.168.1.1,nw_dst=1.2.3.4,
    ,tp_dst=8080, actions=DROP
> sh ovs-ofctl dump-flows s1
```

```
h1
# curl http://1.2.3.4:8080
```