

```

pinyu@sdnlab:~$ sudo ovs-vsctl add-br br0 -- set Bridge br0 fail-mode=secure
[sudo] password for pinyu:
ovs-vsctl: cannot create a bridge named br0 because a bridge named br0 already exists
pinyu@sdnlab:~$ ovs-vsctl del-br br0
ovs-vsctl: unix:/usr/local/var/run/openvswitch/db.sock: database connection failed (Permission denied)
pinyu@sdnlab:~$ sudo ovs-vsctl del-br br0
[sudo] password for pinyu:
pinyu@sdnlab:~$ sudo ovs-vsctl add-br br0 -- set Bridge br0 fail-mode=secure

```

```

pinyu@sdnlab:~$ sudo ovs-vsctl show
6abe975b-72dd-4c11-bae7-d155570bf010
    Bridge br0
        fail_mode: secure
        Port br0
            Interface br0
                type: internal
    ovs_version: "2.12.90"

```

```

pinyu@sdnlab:~/ovs$ vi add4port.sh
pinyu@sdnlab:~/ovs$ ls
acinclude.m4  autom4te.cache  configure      distfiles      m4             missing-distfiles  python          tutorial          xenserver
add4port.sh  build-aux       configure.ac   Documentation  MAINTAINERS.rst  NEWS              README.rst      utilities
all-distfiles  config.h        cxx-check     include        Makefile         NOTICE          rhel            Vagrantfile
all-gtfiles    config.h.in     datapath      ipsec          Makefile.am      ofproto          selinux         Vagrantfile-FreeBSD
appveyor.yml   config.log      datapath-windows  lib           Makefile.in      ovsdb            stamp-h1        vswitchd
AUTHORS.rst    config.status   debian        LICENSE        manpage-check    package.m4       tests           vtep
               config.status   debian        LICENSE        manpages.mk      poc              third-party     windows
pinyu@sdnlab:~/ovs$
pinyu@sdnlab:~/ovs$ sudo chmod 700 add4port.sh
pinyu@sdnlab:~/ovs$ ls
acinclude.m4  autom4te.cache  configure      distfiles      m4             missing-distfiles  python          tutorial          xenserver
add4port.sh  build-aux       configure.ac   include        Makefile         NOTICE          rhel            Vagrantfile
all-distfiles  config.h        cxx-check     ipsec          Makefile.am      ofproto          selinux         Vagrantfile-FreeBSD
all-gtfiles    config.h.in     datapath      lib           Makefile.in      ovsdb            stamp-h1        vswitchd
appveyor.yml   config.log      datapath-windows  libtool       manpage-check    package.m4       tests           vtep
AUTHORS.rst    config.status   debian        LICENSE        manpages.mk      poc              third-party     windows

```

```

pinyu@sdnlab:~/ovs$ sudo ./add4port.sh
ovs-vsctl: Port does not contain a column whose name matches "--set"
ovs-ofctl: br0: couldn't find port `p1'
ovs-vsctl: Port does not contain a column whose name matches "--set"
ovs-ofctl: br0: couldn't find port `p2'
ovs-vsctl: Port does not contain a column whose name matches "--set"
ovs-ofctl: br0: couldn't find port `p3'
ovs-vsctl: Port does not contain a column whose name matches "--set"
ovs-ofctl: br0: couldn't find port `p4'
pinyu@sdnlab:~/ovs$
pinyu@sdnlab:~/ovs$ vi add4port.sh
pinyu@sdnlab:~/ovs$ sudo ./add4port.sh
pinyu@sdnlab:~/ovs$

```

```

pinyu@sdnlab:~/ovs$ sudo ovs-vsctl show
6abe975b-72dd-4c11-bae7-d155570bf010
    Bridge br0
        fail_mode: secure
        Port p2
            Interface p2
                type: internal
        Port br0
            Interface br0
                type: internal
        Port p3
            Interface p3
                type: internal
        Port p1
            Interface p1
                type: internal
        Port p4
            Interface p4
                type: internal
    ovs_version: "2.12.90"

```

```

pinyu@sdnlab:~/ovs$ sudo ovs-ofctl show br0
OFPT_FEATURES_REPLY (xid=0x2): dpid:0000f258153abf43
n_tables:254, n_buffers:0
capabilities: FLOW_STATS TABLE_STATS PORT_STATS QUEUE_STATS ARP_MATCH_IP
actions: output enqueue set_vlan_vid set_vlan_pcp strip_vlan mod_dl_src mod_dl_dst mod_nw_src mod_nw_dst mod_nw_tos mod_tp_src mod_tp_dst
1(p1): addr:a6:2c:51:cb:78:5c
    config: 0
    state: 0
    speed: 0 Mbps now, 0 Mbps max
2(p2): addr:32:93:61:3d:58:75
    config: 0
    state: 0
    speed: 0 Mbps now, 0 Mbps max
3(p3): addr:32:bc:97:1f:bc:70
    config: 0
    state: 0
    speed: 0 Mbps now, 0 Mbps max
4(p4): addr:22:d8:cb:cf:5e:aa
    config: 0
    state: 0
    speed: 0 Mbps now, 0 Mbps max
LOCAL(br0): addr:f2:58:15:3a:bf:43
    config: PORT_DOWN
    state: LINK_DOWN
    speed: 0 Mbps now, 0 Mbps max
OFPT_GET_CONFIG_REPLY (xid=0x4): frags=normal miss send len=0

```

```

pinyu@sdnlab:~/ovs$ sudo ovs-ofctl add-flow br0 \
> "table=0,dl_src=01:00:00:00:00:00/01:00:00:00:00:00,actions=drop"
pinyu@sdnlab:~/ovs$ sudo ovs-ofctl add-flow br0 "table=0,dl_dst=01:80:c2:00:00:00/ff:ff:ff:ff:f0,actions=drop"

```

```

pinyu@sdnlab:~/ovs$ sudo ovs-ofctl add-flow br0 "table=0,priority=0,actions=resubmit(,1)"
pinyu@sdnlab:~/ovs$ sudo ovs-ofctl dump-flows br0
cookie=0x0, duration=329.916s, table=0, n_packets=0, n_bytes=0, dl_src=01:00:00:00:00:00/01:00:00:00:00:00 actions=drop
cookie=0x0, duration=195.016s, table=0, n_packets=0, n_bytes=0, dl_dst=01:80:c2:00:00:00/ff:ff:ff:ff:f0 actions=drop
cookie=0x0, duration=42.753s, table=0, n_packets=5, n_bytes=882, priority=0 actions=resubmit(,1)

```

```

pinyu@sdnlab:~/ovs$ sudo ovs-appctl ofproto/trace br0 in_port=1,dl_dst=01:80:c2:00:00:05
Flow: in_port=1,vlan_tci=0x0000,dl_src=00:00:00:00:00:00,dl_dst=01:80:c2:00:00:05,dl_type=0x0000

bridge("br0")
-----
0. dl_dst=01:80:c2:00:00:00/ff:ff:ff:ff:f0, priority 32768
   drop

Final flow: unchanged
MegafLOW: recirc_id=0,eth,in_port=1,dl_src=00:00:00:00:00:00/01:00:00:00:00:00,dl_dst=01:80:c2:00:00:00/ff:ff:ff:ff:f0,dl_type=0x0000
Datapath actions: drop

```

```

pinyu@sdnlab:~/ovs$ sudo ovs-appctl ofproto/trace br0 in_port=1,dl_dst=01:80:c2:00:00:10
Flow: in_port=1,vlan_tci=0x0000,dl_src=00:00:00:00:00:00,dl_dst=01:80:c2:00:00:10,dl_type=0x0000

bridge("br0")
-----
0. priority 0
   resubmit(,1)
1. No match.
   drop

Final flow: unchanged
MegafLOW: recirc_id=0,eth,in_port=1,dl_src=00:00:00:00:00:00/01:00:00:00:00:00,dl_dst=01:80:c2:00:00:10/ff:ff:ff:ff:f0,dl_type=0x0000
Datapath actions: drop

```

```
pinyu@sdnlab:~/ovs$ ovs-ofctl add-flow br0 "table=1,priority=0,actions=drop"
ovs-ofctl: /usr/local/var/run/openvswitch/br0.mgmt: failed to open socket (Permission denied)
pinyu@sdnlab:~/ovs$ sudo ovs-ofctl add-flow br0 "table=1,priority=0,actions=drop"
[sudo] password for pinyu:
```

```
pinyu@sdnlab:~/ovs$ sudo ovs-ofctl add-flows br0 - << 'EOF'
> table = 1 ,priority=99,in_port = 2,vlan_tci=0,actions=mod_vlan_vid:20,resubmit(,2)
> table = 1, priority=99,in_port = 3,vlan_tci=0,actions=mod_vlan_vid:30,resubmit(,2)
> table = 1, priority=99,in_port = 4,vlan_tci=0,actions=mod_vlan_vid:30,resubmit(,2)
> EOF
ovs-ofctl: -:1: field table missing value
pinyu@sdnlab:~/ovs$ sudo ovs-ofctl add-flows br0 << 'EOF'
table = 1 ,priority=99,in_port = 2,vlan_tci=0,actions=mod_vlan_vid:20,resubmit(,2)
table = 1, priority=99,in_port = 3,vlan_tci=0,actions=mod_vlan_vid:30,resubmit(,2)
table = 1, priority=99,in_port = 4,vlan_tci=0,actions=mod_vlan_vid:30,resubmit(,2)
EOF
ovs-ofctl: 'add-flows' command requires at least 2 arguments
pinyu@sdnlab:~/ovs$ sudo ovs-ofctl add-flows br0 - << 'EOF'
table = 1 ,priority=99,in_port = 2,vlan_tci=0,actions=mod_vlan_vid:20,resubmit(,2)
table = 1, priority=99,in_port = 3,vlan_tci=0,actions=mod_vlan_vid:30,resubmit(,2)
table = 1, priority=99,in_port = 4,vlan_tci=0,actions=mod_vlan_vid:30,resubmit(,2)
EOF
ovs-ofctl: -:1: field table missing value
```

```
pinyu@sdnlab:~/ovs$ sudo ovs-appctl ofproto/trace br0 in_port=1,vlan_tci=5
Flow: in_port=1,vlan_tci=0x0005,vlan_tci1=0x0000,d_l_src=00:00:00:00:00:00,d_l_dst=00:00:00:00:00:00,d_l_type=0x0000

bridge("br0")
-----
0. priority 0
   resubmit(,1)
1. in_port=1, priority 99
   resubmit(,2)
2. No match.
   drop

Final flow: unchanged
Megaflow: recirc_id=0,eth,in_port=1,d_l_src=00:00:00:00:00:00/01:00:00:00:00:00,d_l_dst=00:00:00:00:00:00/ff:ff:ff:ff:ff:f0,d_l_type=0x0000
Datapath actions: drop
```

```
pinyu@sdnlab:~/ovs$ sudo ovs-appctl ofproto/trace br0 in_port=2
Flow: in_port=2,vlan_tci=0x0000,d_l_src=00:00:00:00:00:00,d_l_dst=00:00:00:00:00:00,d_l_type=0x0000

bridge("br0")
-----
0. priority 0
   resubmit(,1)
1. priority 0
   drop

Final flow: unchanged
Megaflow: recirc_id=0,eth,in_port=2,d_l_src=00:00:00:00:00:00/01:00:00:00:00:00,d_l_dst=00:00:00:00:00:00/ff:ff:ff:ff:ff:f0,d_l_type=0x0000
Datapath actions: drop
```

```
pinyu@sdnlab:~/ovs$ ovs-ofctl add-flows br0 - <<'EOF'
> table=1,priority=99, in_port=2, vlan_tci=0, actions=mod_vlan_vid:20, resubmit(,2)
> table=1, priority=99, in_port=3, vlan_tci=0, actions=mod_vlan_vid:30, resubmit(,2)
> table=1, priority=99, in_port=4, vlan_tci=0, actions=mod_vlan_vid:30, resubmit(,2)
> EOF
ovs-ofctl: /usr/local/var/run/openvswitch/br0.mgmt: failed to open socket (Permission denied)
pinyu@sdnlab:~/ovs$ sudo ovs-ofctl add-flows br0 - <<'EOF'
table=1, priority=99, in_port=2, vlan_tci=0, actions=mod_vlan_vid:20, resubmit(,2)
table=1, priority=99, in_port=3, vlan_tci=0, actions=mod_vlan_vid:30, resubmit(,2)
table=1, priority=99, in_port=4, vlan_tci=0, actions=mod_vlan_vid:30, resubmit(,2)
EOF
```

```
pinyu@sdnlab:~/ovs$ sudo ovs-ofctl dump-flows br0
cookie=0x0, duration=4383.461s, table=0, n_packets=0, n_bytes=0, d_l_src=01:00:00:00:00:00/01:00:00:00:00:00 actions=drop
cookie=0x0, duration=4248.561s, table=0, n_packets=0, n_bytes=0, d_l_dst=01:80:c2:00:00:00/ff:ff:ff:ff:ff:f0 actions=drop
cookie=0x0, duration=4096.298s, table=0, n_packets=22, n_bytes=3136, priority=0 actions=resubmit(,1)
cookie=0x0, duration=2027.719s, table=1, n_packets=2, n_bytes=273, priority=99,in_port=p1 actions=resubmit(,2)
cookie=0x0, duration=167.695s, table=1, n_packets=0, n_bytes=0, priority=99,in_port=p2,vlan_tci=0x0000 actions=mod_vlan_vid:20,resubmit(,2)
cookie=0x0, duration=167.695s, table=1, n_packets=0, n_bytes=0, priority=99,in_port=p3,vlan_tci=0x0000 actions=mod_vlan_vid:30,resubmit(,2)
cookie=0x0, duration=167.695s, table=1, n_packets=0, n_bytes=0, priority=99,in_port=p4,vlan_tci=0x0000 actions=mod_vlan_vid:30,resubmit(,2)
cookie=0x0, duration=2218.966s, table=1, n_packets=6, n_bytes=819, priority=0 actions=drop
```

```
pinyu@sdnlab:~/ovs$ sudo ovs-appctl ofproto/trace br0 in_port=2,vlan_tci=5
Flow: in_port=2,vlan_tci=0x0005,vlan_tci1=0x0000,d_l_src=00:00:00:00:00:00,d_l_dst=00:00:00:00:00:00,d_l_type=0x0000

bridge("br0")
-----
0. priority 0
   resubmit(,1)
1. priority 0
   drop

Final flow: unchanged
Megaflow: recirc_id=0,eth,in_port=2,vlan_tci=0x0005,d_l_src=00:00:00:00:00:00/01:00:00:00:00:00,d_l_dst=00:00:00:00:00:00/ff:ff:ff:ff:ff:f0,d_l_type=0x0000
Datapath actions: drop
```

```
pinyu@sdnlab:~/ovs$ sudo ovs-appctl ofproto/trace br0 in_port=2
Flow: in_port=2,vlan_tci=0x0000,d_l_src=00:00:00:00:00:00,d_l_dst=00:00:00:00:00:00,d_l_type=0x0000

bridge("br0")
-----
0. priority 0
   resubmit(,1)
1. in_port=2,vlan_tci=0x0000, priority 99
   mod_vlan_vid:20
   resubmit(,2)
2. No match.
   drop

Final flow: in_port=2,d_l_vlan=20,d_l_vlan_pcp=0,vlan_tci1=0x0000,d_l_src=00:00:00:00:00:00,d_l_dst=00:00:00:00:00:00,d_l_type=0x0000
MegafLOW: recirc_id=0,eth,in_port=2,d_l_src=00:00:00:00:00:00/01:00:00:00:00:00,d_l_dst=00:00:00:00:00:00/ff:ff:ff:ff:ff:f0,d_l_type=0x0000
Datapath actions: drop
```

```
pinyu@sdnlab:~$ sudo ovs-ofctl add-flow br0 \
[sudo] password for pinyu:
Sorry, try again.
[sudo] password for pinyu:
sudo: 1 incorrect password attempt
```

```
pinyu@sdnlab:~/ovs$ sudo ovs-ofctl add-flow br0 \
> "table=2 actions=learn(table=10,NXM_OF_VLAN_TCI[0..11], \
> NXM_OF_ETH_DST[]=NXM_OF_ETH_SRC[],\
> load:NXM_OF_IN_PORT[]->NXM_NX_REG0[0..15]), \
> resubmit(,3)"
[sudo] password for pinyu:
ovs-ofctl: table=10,NXM_OF_VLAN_TCI[0..11], NXM_OF_ETH_DST[]=NXM_OF_ETH_SRC[],load:NXM_OF_IN_PORT[]->NXM_NX_REG0[0..15]: unknown keyword NXM_OF_VLAN_TCI[0..11]
pinyu@sdnlab:~/ovs$ sudo ovs-ofctl add-flow br0 "table=2 actions=learn(table=10,NXM_OF_VLAN_TCI[0..11], \
NXM_OF_ETH_DST[]=NXM_OF_ETH_SRC[],\
load:NXM_OF_IN_PORT[]->NXM_NX_REG0[0..15]), \
resubmit(,3)"
ovs-ofctl: NXM_NX_REG0[0..15]: unknown field 'NXM_NX_REG0'
pinyu@sdnlab:~/ovs$ sudo ovs-ofctl add-flow br0 "table=2 actions=learn(table=10,NXM_OF_VLAN_TCI[0..11], \
NXM_OF_ETH_DST[]=NXM_OF_ETH_SRC[],\
load:NXM_OF_IN_PORT[]->NXM_NX_REG0[0..15]), \
resubmit(,3)"
```

```
pinyu@sdnlab:~/ovs$ sudo ovs-ofctl dump-flows br0
cookie=0x0, duration=5994.865s, table=0, n_packets=0, n_bytes=0, d_l_src=01:00:00:00:00:00/01:00:00:00:00:00 actions=drop
cookie=0x0, duration=5859.965s, table=0, n_packets=0, n_bytes=0, d_l_dst=01:00:c2:00:00:00/ff:ff:ff:ff:ff:f0 actions=drop
cookie=0x0, duration=5787.702s, table=0, n_packets=54, n_bytes=6392, priority=0 actions=resubmit(,1)
cookie=0x0, duration=3639.123s, table=1, n_packets=10, n_bytes=1087, priority=99,in_port=p1 actions=resubmit(,2)
cookie=0x0, duration=1779.099s, table=1, n_packets=8, n_bytes=814, priority=99,in_port=p2,vlan_tci=0x0000 actions=mod_vlan_vid:20,resubmit(,2)
cookie=0x0, duration=1779.099s, table=1, n_packets=8, n_bytes=814, priority=99,in_port=p3,vlan_tci=0x0000 actions=mod_vlan_vid:30,resubmit(,2)
cookie=0x0, duration=1779.099s, table=1, n_packets=8, n_bytes=814, priority=99,in_port=p4,vlan_tci=0x0000 actions=mod_vlan_vid:30,resubmit(,2)
cookie=0x0, duration=3830.370s, table=1, n_packets=6, n_bytes=819, priority=0 actions=drop
cookie=0x0, duration=140.210s, table=2, n_packets=0, n_bytes=0, actions=learn(table=10,NXM_OF_VLAN_TCI[0..11],NXM_OF_ETH_DST[]=NXM_OF_ETH_SRC[],load:NXM_OF_IN_PORT[]->NXM_NX_REG0[0..15]),resubmit(,3)
```

```
Datapath actions: drop
pinyu@sdnlab:~/ovs$ sudo ovs-ofctl dump-flows br0 table=10
cookie=0x0, duration=300.132s, table=10, n_packets=0, n_bytes=0, vlan_tci=0x0014/0x0fff,d_l_dst=50:00:00:00:00:01 actions=load:0x1->NXM_NX_REG0[0..15]
cookie=0x0, duration=54.692s, table=10, n_packets=0, n_bytes=0, vlan_tci=0x001e/0x0fff,d_l_dst=32:bc:97:1f:bc:70 actions=load:0x3->NXM_NX_REG0[0..15]
```

```
pinyu@sdnlab:~/ovs$ sudo ovs-appctl ofproto/trace br0 in_port=1,vlan_tci=20,d_l_src=50:00:00:00:00:01 -generate
Flow: in_port=1,vlan_tci=0x0014,vlan_tci1=0x0000,d_l_src=50:00:00:00:00:01,d_l_dst=00:00:00:00:00:00,d_l_type=0x0000

bridge("br0")
-----
0. priority 0
   resubmit(,1)
1. in_port=1, priority 99
   resubmit(,2)
2. priority 32768
   learn(table=10,NXM_OF_VLAN_TCI[0..11],NXM_OF_ETH_DST[]=NXM_OF_ETH_SRC[],load:NXM_OF_IN_PORT[]->NXM_NX_REG0[0..15])
   -> table=10 vlan_tci=0x0014/0x0fff,d_l_dst=50:00:00:00:00:01 priority=32768 actions=load:0x1->NXM_NX_REG0[0..15]
   resubmit(,3)
3. No match.
   drop

Final flow: unchanged
MegafLOW: recirc_id=0,eth,in_port=1,vlan_tci=0x0014/0x1fff,d_l_src=50:00:00:00:00:01,d_l_dst=00:00:00:00:00:00/ff:ff:ff:ff:ff:f0,d_l_type=0x0000
Datapath actions: drop
pinyu@sdnlab:~/ovs$ sudo ovs-ofctl dump-flows br0 table=10
cookie=0x0, duration=300.132s, table=10, n_packets=0, n_bytes=0, vlan_tci=0x0014/0x0fff,d_l_dst=50:00:00:00:00:01 actions=load:0x1->NXM_NX_REG0[0..15]
cookie=0x0, duration=54.692s, table=10, n_packets=0, n_bytes=0, vlan_tci=0x001e/0x0fff,d_l_dst=32:bc:97:1f:bc:70 actions=load:0x3->NXM_NX_REG0[0..15]
```

```
pinyu@sdnlab:~/ovs$ sudo ovs-appctl ofproto/trace br0 in_port=2,dl_src=50:00:00:00:01 -generate
Flow: in_port=2,vlan_tci=0x0000,dl_src=50:00:00:00:01,dl_dst=00:00:00:00:00,dl_type=0x0000

bridge("br0")
-----
0. priority 0
   resubmit(,1)
1. in_port=2,vlan_tci=0x0000, priority 99
   mod_vlan_vid:20
   resubmit(,2)
2. priority 32768
   learn(table=10,NXM_OF_VLAN_TCI[0..11],NXM_OF_ETH_DST[]=NXM_OF_ETH_SRC[],load:NXM_OF_IN_PORT[]->NXM_NX_REG0[0..15])
   -> table=10 vlan_tci=0x0014/0x0fff,dl_dst=50:00:00:00:01 priority=32768 actions=load:0x2->NXM_NX_REG0[0..15]
   resubmit(,3)
3. No match.
   drop

Final flow: in_port=2,dl_vlan=20,dl_vlan_pcp=0,vlan_tci=0x0000,dl_src=50:00:00:00:01,dl_dst=00:00:00:00:00,dl_type=0x0000
MegafLOW: recirc_id=0,eth,in_port=2,dl_src=50:00:00:00:01,dl_dst=00:00:00:00:00/ff:ff:ff:ff:f0,dl_type=0x0000
Datapath actions: drop
pinyu@sdnlab:~/ovs$
pinyu@sdnlab:~/ovs$
pinyu@sdnlab:~/ovs$
pinyu@sdnlab:~/ovs$ sudo ovs-ofctl dump-flows br0 table=10
cookie=0x0, duration=440.887s, table=10, n_packets=0, n_bytes=0, vlan_tci=0x001e/0x0fff,dl_dst=32:bc:97:1f:bc:70 actions=load:0x3->NXM_NX_REG0[0..15]
cookie=0x0, duration=309.736s, table=10, n_packets=0, n_bytes=0, vlan_tci=0x0014/0x0fff,dl_dst=32:93:61:3d:58:75 actions=load:0x2->NXM_NX_REG0[0..15]
cookie=0x0, duration=47.592s, table=10, n_packets=0, n_bytes=0, vlan_tci=0x0000/0x0fff,dl_dst=a6:2c:51:cb:78:5c actions=load:0x1->NXM_NX_REG0[0..15]
cookie=0x0, duration=686.247s, table=10, n_packets=0, n_bytes=0, vlan_tci=0x0014/0x0fff,dl_dst=50:00:00:00:00:01 actions=load:0x2->NXM_NX_REG0[0..15]
```

```
pinyu@sdnlab:~/ovs$ sudo ovs-ofctl add-flow br0 \
> "table=3 priority=50 actions=resubmit(,10),resubmit(,4)"
[sudo] password for pinyu:
pinyu@sdnlab:~/ovs$ sudo ovs-appctl ofproto/trace br0 in_port=1,dl_vlan=20,dl_src=f0:00:00:00:01,dl_dst=90:00:00:00:01 -generate
Flow: in_port=1,dl_vlan=20,dl_vlan_pcp=0,vlan_tci=0x0000,dl_src=f0:00:00:00:01,dl_dst=90:00:00:00:01,dl_type=0x0000

bridge("br0")
-----
0. priority 0
   resubmit(,1)
1. in_port=1, priority 99
   resubmit(,2)
2. priority 32768
   learn(table=10,NXM_OF_VLAN_TCI[0..11],NXM_OF_ETH_DST[]=NXM_OF_ETH_SRC[],load:NXM_OF_IN_PORT[]->NXM_NX_REG0[0..15])
   -> table=10 vlan_tci=0x0014/0x0fff,dl_dst=f0:00:00:00:01 priority=32768 actions=load:0x1->NXM_NX_REG0[0..15]
   resubmit(,3)
3. priority 50
   resubmit(,10)
   10. No match.
       drop
   resubmit(,4)
4. No match.
   drop

Final flow: unchanged
MegafLOW: recirc_id=0,eth,in_port=1,dl_vlan=20,dl_src=f0:00:00:00:01,dl_dst=90:00:00:00:01,dl_type=0x0000
Datapath actions: drop
```

```
pinyu@sdnlab:~/ovs$ sudo ovs-ofctl dump-flows br0 table=10
[sudo] password for pinyu:
cookie=0x0, duration=1294.163s, table=10, n_packets=0, n_bytes=0, vlan_tci=0x001e/0x0fff,dl_dst=32:bc:97:1f:bc:70 actions=load:0x3->NXM_NX_REG0[0..15]
cookie=0x0, duration=1163.092s, table=10, n_packets=0, n_bytes=0, vlan_tci=0x0014/0x0fff,dl_dst=32:93:61:3d:58:75 actions=load:0x2->NXM_NX_REG0[0..15]
cookie=0x0, duration=900.948s, table=10, n_packets=0, n_bytes=0, vlan_tci=0x0000/0x0fff,dl_dst=a6:2c:51:cb:78:5c actions=load:0x1->NXM_NX_REG0[0..15]
cookie=0x0, duration=1539.003s, table=10, n_packets=0, n_bytes=0, vlan_tci=0x0014/0x0fff,dl_dst=50:00:00:00:00:01 actions=load:0x2->NXM_NX_REG0[0..15]
cookie=0x0, duration=769.876s, table=10, n_packets=0, n_bytes=0, vlan_tci=0x001e/0x0fff,dl_dst=22:d8:cb:cf:5e:aa actions=load:0x4->NXM_NX_REG0[0..15]
cookie=0x0, duration=229.546s, table=10, n_packets=0, n_bytes=0, vlan_tci=0x0014/0x0fff,dl_dst=f0:00:00:00:01 actions=load:0x1->NXM_NX_REG0[0..15]
```

```
pinyu@sdnlab:~/ovs$ sudo ovs-appctl ofproto/trace br0 in_port=2,dl_src=90:00:00:00:01,dl_dst=f0:00:00:00:01 -generate
Flow: in_port=2,vlan_tci=0x0000,dl_src=90:00:00:00:01,dl_dst=f0:00:00:00:01,dl_type=0x0000

bridge("br0")
-----
0. priority 0
   resubmit(,1)
1. in_port=2,vlan_tci=0x0000, priority 99
   mod_vlan_vid:20
   resubmit(,2)
2. priority 32768
   learn(table=10,NXM_OF_VLAN_TCI[0..11],NXM_OF_ETH_DST[]=NXM_OF_ETH_SRC[],load:NXM_OF_IN_PORT[]->NXM_NX_REG0[0..15])
   -> table=10 vlan_tci=0x0014/0x0fff,dl_dst=90:00:00:00:01 priority=32768 actions=load:0x2->NXM_NX_REG0[0..15]
   resubmit(,3)
3. priority 50
   resubmit(,10)
   10. vlan_tci=0x0014/0x0fff,dl_dst=f0:00:00:00:01, priority 32768
       load:0x1->NXM_NX_REG0[0..15]
   resubmit(,4)
4. No match.
   drop

Final flow: reg0=0x1,in_port=2,dl_vlan=20,dl_vlan_pcp=0,vlan_tci=0x0000,dl_src=90:00:00:00:01,dl_dst=f0:00:00:00:01,dl_type=0x0000
MegafLOW: recirc_id=0,eth,in_port=2,dl_src=90:00:00:00:01,dl_dst=f0:00:00:00:01,dl_type=0x0000
Datapath actions: drop
```

```

pinyu@sdnlab:~/ovs$ sudo ovs-ofctl add-flow br0 "table=4 reg0=1 actions=1"
pinyu@sdnlab:~/ovs$ sudo ovs-ofctl add-flows br0 - << 'EOF'
> table=4 reg0=2 actions=strip_vlan,2
> table=4 reg0=3 actions=strip_vlan,3
> table=4 reg0=4 actions=strip_vlan,4
> EOF
pinyu@sdnlab:~/ovs$ sudo ovs-ofctl add-flows br0 - << 'EOF'
> table=4 reg0 priority=99 dl_vlan=20 actions=1,strip_vlan,2
> table=4 reg0 priority=99 dl_vlan=30 actions=1,strip_vlan,3,4
> table=4 reg0^C
pinyu@sdnlab:~/ovs$ sudo ovs-ofctl add-flows br0 - << 'EOF'
table=4 reg0=0 priority=99 dl_vlan=20 actions=1,strip_vlan,2
table=4 reg0=0 priority=99 dl_vlan=30 actions=1,strip_vlan,3,4
>
> table=4 reg0=0 priority=50 actions=1
> EOF
pinyu@sdnlab:~/ovs$ sudo ovs-appctl ofproto/trace br0 in_port=1,dl_dst=ff:ff:ff:ff:ff:ff,dl_vlan=30
Flow: in_port=1,dl_vlan=30,dl_vlan_pcp=0,vlan_tci=0x0000,dl_src=00:00:00:00:00:00,dl_dst=ff:ff:ff:ff:ff:ff,dl_type=0x0000

bridge("br0")
-----
0. priority 0
  resubmit(,1)
1. in_port=1, priority 99
  resubmit(,2)
2. priority 32768
  learn(table=10,NXM_OF_VLAN_TCI[0..11],NXM_OF_ETH_DST[]=NXM_OF_ETH_SRC[],load:NXM_OF_IN_PORT[]->NXM_NX_REG0[0..15])
  >> suppressing side effects, so learn action ignored
  resubmit(,3)
3. priority 50
  resubmit(,10)
  10. No match.
    drop
  resubmit(,4)
4. reg0=0,dl_vlan=30, priority 99
  output:1
  >> skipping output to input port
  strip_vlan
  output:3
  output:4

Final flow: in_port=1,vlan_tci=0x0000,dl_src=00:00:00:00:00:00,dl_dst=ff:ff:ff:ff:ff:ff,dl_type=0x0000
Megaflow: recirc_id=0,eth,in_port=1,dl_vlan=30,dl_vlan_pcp=0,dl_src=00:00:00:00:00:00,dl_dst=ff:ff:ff:ff:ff:ff,dl_type=0x0000
Datapath actions: pop_vlan,4,5

pinyu@sdnlab:~/ovs$ sudo ovs-appctl ofproto/trace br0 in_port=3,dl_dst=ff:ff:ff:ff:ff:ff
Flow: in_port=3,vlan_tci=0x0000,dl_src=00:00:00:00:00:00,dl_dst=ff:ff:ff:ff:ff:ff,dl_type=0x0000

bridge("br0")
-----
0. priority 0
  resubmit(,1)
1. in_port=3,vlan_tci=0x0000, priority 99
  mod_vlan_vid:30
  resubmit(,2)
2. priority 32768
  learn(table=10,NXM_OF_VLAN_TCI[0..11],NXM_OF_ETH_DST[]=NXM_OF_ETH_SRC[],load:NXM_OF_IN_PORT[]->NXM_NX_REG0[0..15])
  >> suppressing side effects, so learn action ignored
  resubmit(,3)
3. priority 50
  resubmit(,10)
  10. No match.
    drop
  resubmit(,4)
4. reg0=0,dl_vlan=30, priority 99
  output:1
  strip_vlan
  output:3
  >> skipping output to input port
  output:4

Final flow: unchanged
Megaflow: recirc_id=0,eth,in_port=3,dl_src=00:00:00:00:00:00,dl_dst=ff:ff:ff:ff:ff:ff,dl_type=0x0000
Datapath actions: push_vlan(vid=30,pcp=0),2,pop_vlan,5

```

MAC Learning


```

pinyu@sdnlab:~/ovs$ sudo ovs-appctl ofproto/trace br0 in_port=1,d_l_vlan=30,d_l_src=10:00:00:00:00:01,d_l_dst=20:00:00:00:00:01 -generate
[sudo] password for pinyu:
Flow: in_port=1,d_l_vlan=30,d_l_vlan_pcp=0,vlan_tci=0x0000,d_l_src=10:00:00:00:00:01,d_l_dst=20:00:00:00:00:01,d_l_type=0x0000

bridge("br0")
-----
0. priority 0
   resubmit(,1)
1. in_port=1, priority 99
   resubmit(,2)
2. priority 32768
   learn(table=10,NXM_OF_VLAN_TCI[0..11],NXM_OF_ETH_DST[]=NXM_OF_ETH_SRC[],load:NXM_OF_IN_PORT[]->NXM_NX_REG0[0..15])
   -> table=10 vlan_tci=0x001e/0x0fff,d_l_dst=10:00:00:00:00:01 priority=32768 actions=load:0x1->NXM_NX_REG0[0..15]
   resubmit(,3)
3. priority 50
   resubmit(,10)
   10. No match.
       drop
   resubmit(,4)
4. reg0=0,d_l_vlan=30, priority 99
   output:1
   >> skipping output to input port
   strip_vlan
   output:3
   output:4

Final flow: in_port=1,vlan_tci=0x0000,d_l_src=10:00:00:00:00:01,d_l_dst=20:00:00:00:00:01,d_l_type=0x0000
Megaflow: recirc_id=0,eth,in_port=1,d_l_vlan=30,d_l_vlan_pcp=0,d_l_src=10:00:00:00:00:01,d_l_dst=20:00:00:00:00:01,d_l_type=0x0000
Datapath actions: pop_vlan,4,5

```

怪怪的

```

pinyu@sdnlab:~/ovs$ sudo ovs-appctl ofproto/trace br0 in_port=4,d_l_src=20:00:00:00:00:01,d_l_dst=10:00:00:00:00:01 -generate
Flow: in_port=4,vlan_tci=0x0000,d_l_src=20:00:00:00:00:01,d_l_dst=10:00:00:00:00:01,d_l_type=0x0000

bridge("br0")
-----
0. priority 0
   resubmit(,1)
1. in_port=4,vlan_tci=0x0000, priority 99
   mod_vlan_vid:30
   resubmit(,2)
2. priority 32768
   learn(table=10,NXM_OF_VLAN_TCI[0..11],NXM_OF_ETH_DST[]=NXM_OF_ETH_SRC[],load:NXM_OF_IN_PORT[]->NXM_NX_REG0[0..15])
   -> table=10 vlan_tci=0x001e/0x0fff,d_l_dst=20:00:00:00:00:01 priority=32768 actions=load:0x4->NXM_NX_REG0[0..15]
   resubmit(,3)
3. priority 50
   resubmit(,10)
   10. vlan_tci=0x001e/0x0fff,d_l_dst=10:00:00:00:00:01, priority 32768
       load:0x4->NXM_NX_REG0[0..15]
   resubmit(,4)
4. reg0=0x4, priority 32768
   strip_vlan
   output:4
   >> skipping output to input port

Final flow: reg0=0x4,in_port=4,vlan_tci=0x0000,d_l_src=20:00:00:00:00:01,d_l_dst=10:00:00:00:00:01,d_l_type=0x0000
Megaflow: recirc_id=0,eth,in_port=4,d_l_src=20:00:00:00:00:01,d_l_dst=10:00:00:00:00:01,d_l_type=0x0000
Datapath actions: drop

```

```

$ sudo ovs-appctl ofproto/trace br0 in_port=4,d_l_src=20:00:00:00:00:01,d_l_dst=10:00:00:00:00:01 -generate
Flow:
...
OpenFlow actions=resubmit(,10),resubmit(,4)

Resubmitted flow: unchanged
Resubmitted regs: reg0=0x0 reg1=0x0 reg2=0x0 reg3=0x0 reg4=0x0 reg5=0x0 reg6=0x0 reg
Resubmitted odp: drop
Rule: table=10 cookie=0 vlan_tci=0x001e/0x0fff,d_l_dst=10:00:00:00:00:01
OpenFlow actions=load:0x1->NXM_NX_REG0[0..15]

Resubmitted flow: reg0=0x1,metadata=0,in_port=4,d_l_vlan=30,d_l_vlan_pcp=0,d_l_src=20:0
Resubmitted regs: reg0=0x1 reg1=0x0 reg2=0x0 reg3=0x0 reg4=0x0 reg5=0x0 reg6=0x0 reg
Resubmitted odp: drop
Rule: table=4 cookie=0 reg0=0x1
OpenFlow actions=output:1

Final flow: unchanged
Relevant fields: skb_priority=0,in_port=4,vlan_tci=0x0000,d_l_src=20:00:00:00:00:01,d_l_dst=10:00:00:00:00:01,d_l_type=
Datapath actions: push_vlan(vid=30,pcp=0),2

```

再跑一次 丟封包學習，這次結果不太一樣

```
pinyu@sdnlab:~/ovs$ sudo ovs-appctl ofproto/trace br0 in_port=1,d_l_vlan=30,d_l_src=10:00:00:00:01,d_l_dst=20:00:00:00:01 -generate
Flow: in_port=1,d_l_vlan=30,d_l_vlan_pcp=0,vlan_tci=0x0000,d_l_src=10:00:00:00:01,d_l_dst=20:00:00:00:01,d_l_type=0x0000

bridge("br0")
-----
0. priority 0
  resubmit,(1)
1. in_port=1, priority 99
  resubmit,(2)
2. priority 32768
  learn(table=10,NXM_OF_VLAN_TCI[0..11],NXM_OF_ETH_DST[]=NXM_OF_ETH_SRC[],load:NXM_OF_IN_PORT[]->NXM_NX_REG0[0..15])
  -> table=10 vlan_tci=0x001e/0x0fff,d_l_dst=10:00:00:00:01 priority=32768 actions=load:0x4->NXM_NX_REG0[0..15]
  resubmit,(3)
3. priority 50
  resubmit,(10)
  10. vlan_tci=0x001e/0x0fff,d_l_dst=20:00:00:00:01, priority 32768
     load:0x4->NXM_NX_REG0[0..15]
  resubmit,(4)
4. reg0=0x4, priority 32768
  strip_vlan
  output:4

Final flow: reg0=0x4,in_port=1,vlan_tci=0x0000,d_l_src=10:00:00:00:01,d_l_dst=20:00:00:00:01,d_l_type=0x0000
Megafow: recirc_id=0,eth,in_port=1,d_l_vlan=30,d_l_vlan_pcp=0,d_l_src=10:00:00:00:01,d_l_dst=20:00:00:00:01,d_l_type=0x0000
Datapath actions: pop_vlan,5
```

但 原本怪怪的部分是想要的結果 ~ 待研究
可能中間有指令打錯(第一次打時)

```
pinyu@sdnlab:~/ovs$ sudo ovs-appctl ofproto/trace br0 in_port=4,d_l_src=20:00:00:00:01,d_l_dst=10:00:00:00:01 -generate
Flow: in_port=4,vlan_tci=0x0000,d_l_src=20:00:00:00:01,d_l_dst=10:00:00:00:01,d_l_type=0x0000

bridge("br0")
-----
0. priority 0
  resubmit,(1)
1. in_port=4,vlan_tci=0x0000, priority 99
  mod_vlan_vid:30
  resubmit,(2)
2. priority 32768
  learn(table=10,NXM_OF_VLAN_TCI[0..11],NXM_OF_ETH_DST[]=NXM_OF_ETH_SRC[],load:NXM_OF_IN_PORT[]->NXM_NX_REG0[0..15])
  -> table=10 vlan_tci=0x001e/0x0fff,d_l_dst=20:00:00:00:01 priority=32768 actions=load:0x4->NXM_NX_REG0[0..15]
  resubmit,(3)
3. priority 50
  resubmit,(10)
  10. vlan_tci=0x001e/0x0fff,d_l_dst=10:00:00:00:01, priority 32768
     load:0x1->NXM_NX_REG0[0..15]
  resubmit,(4)
4. reg0=0x1, priority 32768
  output:1

Final flow: reg0=0x1,in_port=4,d_l_vlan=30,d_l_vlan_pcp=0,vlan_tci=0x0000,d_l_src=20:00:00:00:01,d_l_dst=10:00:00:00:01,d_l_type=0x0000
Megafow: recirc_id=0,eth,in_port=4,d_l_src=20:00:00:00:01,d_l_dst=10:00:00:00:01,d_l_type=0x0000
Datapath actions: push_vlan(vid=30,pcp=0),2
```

The screenshot shows a web browser window on the left and a terminal window on the right. The browser window displays the GitHub page for YanHaoChen/Learning-SDN, showing the OpenFlow configuration and execution results. The terminal window shows the execution of the OpenFlow configuration commands and the resulting flow table.

Browser window content (Learning-SDN):

```
Datapath actions: pop_vlan,4,5

執行的結果跟剛剛很像，因為並未在 table 10 中，找到封包要傳往的主機 10:00:00:00:01

接下來，將 port 4 當成主機 10:00:00:00:01，將封包傳往 20:00:00:00:01：
```

```
$ sudo ovs-appctl ofproto/trace br0 in_port=4,d_l_src=20:00:00:00:01,d_l_dst=10:00:00:00:01
Flow:
...
OpenFlow actions=resubmit,(10),resubmit,(4)

Resubmitted flow: unchanged
Resubmitted regs: reg0=0x0 reg1=0x0 reg2=0x0 reg3=0x0
Resubmitted odp: drop
Rule: table=10 cookie=0 vlan_tci=0x001e/0x0fff,d_l_dst=10:00:00:00:01 priority=32768 actions=load:0x1->NXM_NX_REG0[0..15]
OpenFlow actions=load:0x1->NXM_NX_REG0[0..15]

Resubmitted flow: reg0=0x1,metadata=0,in_port=4,d_l_vl
Resubmitted regs: reg0=0x1 reg1=0x0 reg2=0x0 reg3=0x0
Resubmitted odp: drop
Rule: table=4 cookie=0 reg0=0x1
OpenFlow actions=output:1

Final flow: unchanged
Relevant fields: skb_priority=0,in_port=4,vlan_tci=0x0000,d_l_src=20:00:00:00:01,d_l_dst=10:00:00:00:01,d_l_type=0x0000
Datapath actions: push_vlan(vid=30,pcp=0),2
```

Terminal window content (pinyu@sdnlab:~/ovs):

```
File Edit View Search Terminal Help
pinyu@sdnlab:~/ovs$ sudo ovs-appctl ofproto/trace br0 in_port=4,d_l_src=20:00:00:00:01,d_l_dst=10:00:00:00:01 -generate
Flow: in_port=4,vlan_tci=0x0000,d_l_src=20:00:00:00:01,d_l_dst=10:00:00:00:01,d_l_type=0x0000

bridge("br0")
-----
0. priority 0
  resubmit,(1)
1. in_port=4,vlan_tci=0x0000, priority 99
  mod_vlan_vid:30
  resubmit,(2)
2. priority 32768
  learn(table=10,NXM_OF_VLAN_TCI[0..11],NXM_OF_ETH_DST[]=NXM_OF_ETH_SRC[],load:NXM_OF_IN_PORT[]->NXM_NX_REG0[0..15])
  -> table=10 vlan_tci=0x001e/0x0fff,d_l_dst=20:00:00:00:01 priority=32768 actions=load:0x4->NXM_NX_REG0[0..15]
  resubmit,(3)
3. priority 50
  resubmit,(10)
  10. vlan_tci=0x001e/0x0fff,d_l_dst=10:00:00:00:01, priority 32768
     load:0x4->NXM_NX_REG0[0..15]
  resubmit,(4)
4. reg0=0x4, priority 32768
  strip_vlan
  output:4

Final flow: reg0=0x4,in_port=1,vlan_tci=0x0000,d_l_src=10:00:00:00:01,d_l_dst=20:00:00:00:01,d_l_type=0x0000
Megafow: recirc_id=0,eth,in_port=1,d_l_vlan=30,d_l_vlan_pcp=0,d_l_src=10:00:00:00:01,d_l_dst=20:00:00:00:01,d_l_type=0x0000
Datapath actions: pop_vlan,5

pinyu@sdnlab:~/ovs$ sudo ovs-appctl ofproto/trace br0 in_port=4,d_l_src=20:00:00:00:01,d_l_dst=10:00:00:00:01 -generate
Flow: in_port=4,vlan_tci=0x0000,d_l_src=20:00:00:00:01,d_l_dst=10:00:00:00:01,d_l_type=0x0000

bridge("br0")
-----
0. priority 0
  resubmit,(1)
1. in_port=4,vlan_tci=0x0000, priority 99
  mod_vlan_vid:30
  resubmit,(2)
2. priority 32768
  learn(table=10,NXM_OF_VLAN_TCI[0..11],NXM_OF_ETH_DST[]=NXM_OF_ETH_SRC[],load:NXM_OF_IN_PORT[]->NXM_NX_REG0[0..15])
  -> table=10 vlan_tci=0x001e/0x0fff,d_l_dst=20:00:00:00:01 priority=32768 actions=load:0x4->NXM_NX_REG0[0..15]
  resubmit,(3)
3. priority 50
  resubmit,(10)
  10. vlan_tci=0x001e/0x0fff,d_l_dst=10:00:00:00:01, priority 32768
     load:0x1->NXM_NX_REG0[0..15]
  resubmit,(4)
4. reg0=0x1, priority 32768
  output:1

Final flow: reg0=0x1,in_port=4,d_l_vlan=30,d_l_vlan_pcp=0,vlan_tci=0x0000,d_l_src=20:00:00:00:01,d_l_dst=10:00:00:00:01,d_l_type=0x0000
Megafow: recirc_id=0,eth,in_port=4,d_l_src=20:00:00:00:01,d_l_dst=10:00:00:00:01,d_l_type=0x0000
Datapath actions: push_vlan(vid=30,pcp=0),2

pinyu@sdnlab:~/ovs$
```


歷史紀錄

YanHaoChen/Learning-SDN: S

Learning-SDN/Switch/Openv

Facebook

github.com/YanHaoChen/Learning-SDN/tree/master/Switch/OpenSwitch/Walkthrough

Flow Chart: 簡單的繪製出以上實驗結果之架構流程圖

Table0

Admission Ctrl
Priority, SrcAddr, DestAddr

Table1

VLAN input process

Table2

MACAddr Learning
(1) Drop Origin VLAN pkt
(2) Label pkt with VLAN header

Table10

Letting
DestAddr = SrcAddr
(Storing Database)

Table3

A type for Filter
(Similar to Table0)

Table4

Operation Depends
on Rag0

參考

[ovs/Tutorial](#)

https://github.com/YanHaoChen/Learning-SDN/blob/master/Switch/OpenSwitch/Walkthrough/img/flow_chart.jpg?raw=true

在 這裡輸入文字來搜尋

下午 11:26
2020/1/20

