1.

P11. /etc/config/network

```
config interface 'lan_ctlport'
        option type 'bridge'
        option ifname 'eth0.3'
        option proto 'static'
        option ipaddr '192.168.2.1'
        option netmask '255.255.255.0'
        option ip6assign '60'

config switch
        option name 'switch0'
        option reset '1'
        option enable_vlan '0'

config switch
        option name 'switch1'
        option reset '1'
        option enable_vlan '1'

config switch_vlan
        option device 'switch1'
        option vlan '1'
        option ports '1 2 3 6t'

config switch_vlan
        option device 'switch1'
        option vlan '2'
        option ports '0 6t'

config switch_vlan
        option device 'switch1'
        option vlan '3'
        option ports '4 6t'
```

P13. /etc/config/dhcp

```
config dhcp 'lan_ctlport'
        option interface 'lan_ctlport'
        option start '100'
        option limit '150'
        option leasetime 'infinite'
        option dhcpv6 'server'
        option ra 'server'

config host # VM
        option name 'Ubuntu20.04-vmware'
        option mac '00:0c:29:aa:3a:2b'
        option ip '192.168.2.254'
        option dns '1'
        option leasetime '5d'

config host # Local
        option name 'msi'
        option mac '30:9c:23:93:9d:d5'
        option ip '192.168.2.100'
        option dns '1'
        option leasetime '5d'
```

P14. /etc/config/firewall

```
config zone
        option name lan_ctlport
        list network 'lan_ctlport'
        option input ACCEPT
        option output ACCEPT
        option forward ACCEPT

config zone
        option name           wan
        list    network       'wan'
        list    network       'wan6'
        option input          REJECT
        option output         ACCEPT
        option forward        REJECT
        option masq           1
        option mtu_fix        1

config forwarding
        option src            lan
        option dest           wan

config forwarding
        option src            lan
        option dest           lan_ctlport

config forwarding
        option src lan_ctlport
        option dest wan
```

P18. /etc/config/network

```
config device
        option name 'eth0.1'
        option macaddr '08:be:ac:14:5a:76'

config interface 'lan_phyport'
        option device 'eth0.1'

config interface 'lan'
        option device 'br-lan_ovs'
        option proto 'static'
        option ipaddr '192.168.1.1'
        option netmask '255.255.255.0'
        option ip6assign '60'
```

P20. ovs-vsctl show

```
root@OpenWrt:~# ovs-vsctl show
ffc69bf4-1b91-485b-a1c0-0427498aecb2
    Bridge br-lan_ovs
        Controller "tcp:192.168.2.254"
            is_connected: true
        Port wlan0
            Interface wlan0
        Port wlan1
            Interface wlan1
        Port eth0.1
            Interface eth0.1
        Port br-lan_ovs
            Interface br-lan_ovs
                type: internal
    ovs_version: "2.14.0"
```

2.

ovs-ofctl dump-flows br-lan_ovs

```
root@OpenWrt:~# ovs-ofctl dump-flows br-lan_ovs
 cookie=0x0, duration=90.731s, table=0, n_packets=0, n_bytes=0, priority=1,ip,nw_dst=192.168.2.254 actions=drop
 cookie=0x0, duration=88.711s, table=0, n_packets=3, n_bytes=126, priority=1,in_port=LOCAL,dl_src=08:be:ac:14:5a:76,dl_dst=fc:e2:6c:1f:60:aa actions=output:wlan0
 cookie=0x0, duration=75.733s, table=0, n_packets=2, n_bytes=84, priority=1,in_port=wlan0,dl_src=fc:e2:6c:1f:60:aa,dl_dst=08:be:ac:14:5a:76 actions=LOCAL
 cookie=0x0, duration=90.732s, table=0, n_packets=7, n_bytes=966, priority=0 actions=CONTROLLER:65535
```

3.

Since I don't have available network socket, I drop the packet which ipv4 dest is 192.168.2.254.

```
# add drop action when ipv4 dest = 192.168.2.254
match2 = parser.OFPMatch(eth_type=0x0800,ipv4_dst='192.168.2.254')
actions2 = []
self.add_flow(datapath, 1, match2, actions2)
```

When matching, the action list is empty so the controller will drop the packets which destination is 192.168.2.254.

```
[dorissung@DorisdeMacBook-Air ~ % ping 192.168.2.254
 PING 192.168.2.254 (192.168.2.254): 56 data bytes
 64 bytes from 192.168.2.254: icmp_seq=0 ttl=63 time=12.996 ms
 64 bytes from 192.168.2.254: icmp_seq=1 ttl=63 time=8.576 ms
 64 bytes from 192.168.2.254: icmp_seq=2 ttl=63 time=11.635 ms
 64 bytes from 192.168.2.254: icmp_seq=3 ttl=63 time=12.307 ms
 ^C
 --- 192.168.2.254 ping statistics ---      before
 4 packets transmitted, 4 packets received, 0.0% packet loss
 round-trip min/avg/max/stddev = 8.576/11.379/12.996/1.688 ms
[dorissung@DorisdeMacBook-Air ~ % ping 192.168.2.254
 PING 192.168.2.254 (192.168.2.254): 56 data bytes
 Request timeout for icmp_seq 0
 Request timeout for icmp_seq 1
 Request timeout for icmp_seq 2           after
 ^C
 --- 192.168.2.254 ping statistics ---
 4 packets transmitted, 0 packets received, 100.0% packet loss
```

I use macair and use wifi to connect the router. In the figure, before I attach controller I can ping 192.168.2.254, but after I attach the controller I can't ping 192.168.2.254 anymore.