

How to use openvswitch with KVM

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How to **install** OpenvSwitch ([view](#))

Network Topology

Install Utility

install kvm utility

```
sudo apt-get install qemu-kvm libvirt-bin bridge-utils uml-utilities qemu-utils
```

install openvswitch

```
sudo apt-get install openvswitch-controller openvswitch-brcompat openvswitch-switch  
openvswitch-datapath-source
```

Create a lab

```
qemu-img create -b ubuntu-12.04.2-server-amd64.qcow2 -f qcow2 vlan-clone1.qcow2  
qemu-img create -b ubuntu-12.04.2-server-amd64.qcow2 -f qcow2 vlan-clone2.qcow2
```

Step 1: Create custom `qemu-ifup` and `qemu-ifdown` scripts

```
sudo vi /etc/ovs-ifup
```

/etc/ovs-ifup

```
#!/bin/sh  
  
# add the tapx device to your br0  
switch='br0'  
/sbin/ifconfig $1 0.0.0.0 up  
ovs-vsctl add-port ${switch} $1
```

```
sudo vi /etc/ovs-ifdown
```

/etc/ovs-ifdown

```
#!/bin/sh  
  
# delete the port  
switch='br0'
```

```
/sbin/ifconfig $1 0.0.0.0 down  
ovs-vsctl del-port ${switch} $1
```

Step 2: Create a bridge

```
sudo ovs-vsctl add-br <bridge_name>
```

ex:

```
sudo ovs-vsctl add-br br0
```

Step 3: Add your host to the bridge for [VM] <---> [Host] communication

Add a port to the bridge for the NIC that you want your guests to communicate over

Command:

```
sudo config eth0 0.0.0.0 up  
sudo config br0 <ip> # set a ip that belong to the VM's subnet  
sudo ovs-vsctl add-port <bridge_name> <Host NIC>
```

ex:

```
sudo ifconfig eth0 0.0.0.0 up  
sudo ifconfig br0 172.16.84.3  
sudo ovs-vsctl add-port br0 eth0
```

Launch VM: Start a guest VM and associate a tap device with it

```
# launch VM  
[Host] sudo kvm -m 512 -net nic,macaddr=00:11:22:EE:EE:EE -net  
tap,script=/etc/ovs-ifup,downscript=/etc/ovs-ifdown vlan-clone1.qcow2  
  
# assign IP  
[Guest] sudo ifconfig eth0 172.16.84.135 netmask 255.255.255.0
```

Check

```
sudo ovs-dpctl show
```

```
jing@ubuntu:~$ sudo ovs-dpctl show
system@br0:
    lookups: hit:25 missed:5 lost:0
    flows: 0
    port 0: br0 (internal)
    port 1: tap0
jing@ubuntu:~$
```

Fig. There are

sudo **ovs-ofctl** show **br0**

```
jing@ubuntu:~$ sudo ovs-ofctl show br0
OFPT_FEATURES_REPLY (xid=0x1): ver:0x1, dpid:000022a3ea333c4e
n_tables:255, n_buffers:256
features: capabilities:0xc7, actions:0xffff
  1(tap0): addr:c6:77:3c:be:81:5f
    config:      0
    state:       0
    current:     10MB-FD COPPER
  LOCAL(br0): addr:22:a3:ea:33:3c:4e
    config:      PORT_DOWN
    state:       LINK_DOWN
OFPT_GET_CONFIG_REPLY (xid=0x3): frags=normal miss_send_len=0
jing@ubuntu:~$
```

draft

OpenVSwitch with a bridge using TUN/TAP model

[HOST]

[edit] /etc/ovs-ifup

```
[edit] /etc/ovs-ifdown
sudo chmod 755 /etc/ovs-if*
sudo ovs-vsctl add-br br0
sudo ifconfig br0 172.16.84.1 netmask 255.255.255.0 up
sudo sysctl -w net.ipv4.ip_forward=1
sudo iptables -t nat -A POSTROUTING -o eth0 -s 172.16.1.0/24 -j MASQUERADE
```

[Launch VM]

```
sudo kvm -m 512 -net nic,macaddr=00:11:22:EE:EE:EE -net
tap,script=/etc/ovs-ifup,dnscript=/etc/ovs-ifdown vlan-clone1.qcow2
```

[GUEST]

```
[edit] /etc/network/interfaces
```

```
auto eth0
iface eth0 inet static
address 172.16.84.15
netmask 255.255.255.0
gateway 172.16.84.2
dns-nameservers 168.95.1.1
```

```
sudo /etc/init.d/networking restart
```

Create a lab

```
qemu-img create -b ubuntu-12.04.2-server-amd64.qcow2 -f qcow2 vlan-clone1.qcow2
qemu-img create -b ubuntu-12.04.2-server-amd64.qcow2 -f qcow2 vlan-clone2.qcow2
```

```
sudo kvm -m 512 -net nic,macaddr=00:11:22:EE:EE:EE -net
tap,script=/etc/ovs-ifup,dnscript=/etc/ovs-ifdown vlan-clone1.qcow2&
```

```
sudo kvm -m 512 -net nic,macaddr=00:11:22:EE:EE:EF -net
tap,script=/etc/ovs-ifup,dnscript=/etc/ovs-ifdown vlan-clone2.qcow2&
```

```
sudo ifconfig br0 172.16.84.1
```

```
sudo kvm -m 512 -net nic,macaddr=00:11:22:EE:EE:EE -net  
tap,script=/etc/ovs-ifup,dnscript=/etc/ovs-ifdown vlan-clone1.qcow2
```

[HOST]

```
[edit] /etc/ovs-ifup
```

```
[edit] /etc/ovs-ifdown
```

```
sudo chmod 755 /etc/ovs-if*
```

```
sudo ovs-vsctl add-br br0
```

```
sudo ifconfig br0 172.16.84.1 netmask 255.255.255.0 up
```

```
sudo sysctl -w net.ipv4.ip_forward=1
```

```
sudo iptables -t nat -A POSTROUTING -o eth0 -s 172.16.1.0/24 -j MASQUERADE
```

```
(sudo iptables -t nat -D POSTROUTING -o eth0 -s 172.16.1.0/24 -j MASQUERADE)
```

```
sudo ifconfig eth0 0.0.0.0 up
```

```
sudo ovs-vsctl add-port br0 eth0
```

[Launch VM]

```
sudo kvm -m 512 -net nic,macaddr=00:11:22:EE:EE:EE -net
```

```
tap,script=/etc/ovs-ifup,dnscript=/etc/ovs-ifdown vlan-clone1.qcow2
```

[GUEST]

```
[edit] /etc/network/interfaces
```

```
----
```

```
auto eth0
```

```
iface eth0 inet static
```

```
address 172.16.84.15
```

```
netmask 255.255.255.0
```

```
gateway 172.16.84.2
```

```
dns-nameservers 168.95.1.1
```

```
----
```

```
sudo /etc/init.d/networking restart
```

```
-----  
host
```

Create a lab

```
qemu-img create -b ubuntu-12.04.2-server-amd64.qcow2 -f qcow2 vlan-clone1.qcow2
```

```
qemu-img create -b ubuntu-12.04.2-server-amd64.qcow2 -f qcow2 vlan-clone2.qcow2
```

[HOST]

```
[edit] /etc/ovs-ifup
```

```
[edit] /etc/ovs-ifdown
```

```
sudo vi /etc/ovs-ifup
```

/etc/ovs-ifup

```
#!/bin/sh

# add the tapx device to your br0
switch='br0'
/sbin/ifconfig $1 0.0.0.0 up
ovs-vsctl add-port ${switch} $1
```

```
sudo vi /etc/ovs-ifdown
```

/etc/ovs-ifdown

```
#!/bin/sh

# delete the port
switch='br0'
/sbin/ifconfig $1 0.0.0.0 down
ovs-vsctl del-port ${switch} $1
```

```
host gateway=192.168.0.1
```

```
sudo chmod 755 /etc/ovs-if*
```

```
sudo ovs-vsctl add-br br0
```

```
sudo ifconfig br0 192.168.0.100 netmask 255.255.255.0 up
```

```
#sudo sysctl -w net.ipv4.ip_forward=1
```

```
#sudo iptables -t nat -A POSTROUTING -o eth0 -s 172.16.1.0/24 -j MASQUERADE
```

```
(sudo iptables -t nat -D POSTROUTING -o eth0 -s 172.16.1.0/24 -j MASQUERADE)
```

```
sudo ifconfig eth0 0.0.0.0 up
```

```
sudo route add default gw 10.0.2.2
```

```
sudo ovs-vsctl add-port br0 eth0
```

[Launch VM]

```
sudo kvm -m 512 -net nic,macaddr=00:11:22:EE:EE:EE -net
```

```
tap,script=/etc/ovs-ifup,dnscript=/etc/ovs-ifdown vlan-clone1.qcow2
```

[GUEST]

[edit] /etc/network/interfaces

auto eth0

iface eth0 inet static

address 172.16.84.15

netmask 255.255.255.0

gateway 172.16.84.2

dns-nameservers 168.95.1.1

sudo /etc/init.d/networking restart