

Xen Networking

Virtualisation

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In our guest configuration files, we have been using the following line to configure guest networking:

```
vif =[' ']
```

What does it mean?

DEFAULT NETWORK SETTINGS

It means to use the defaults. But what are those?

Default network settings are defined in `/etc/xen/xl.conf`. The relevant ones right now are

```
vif.default.script="vif-bridge"  
vif.default.bridge="xenbr0"  
vif.default.backend="0"
```

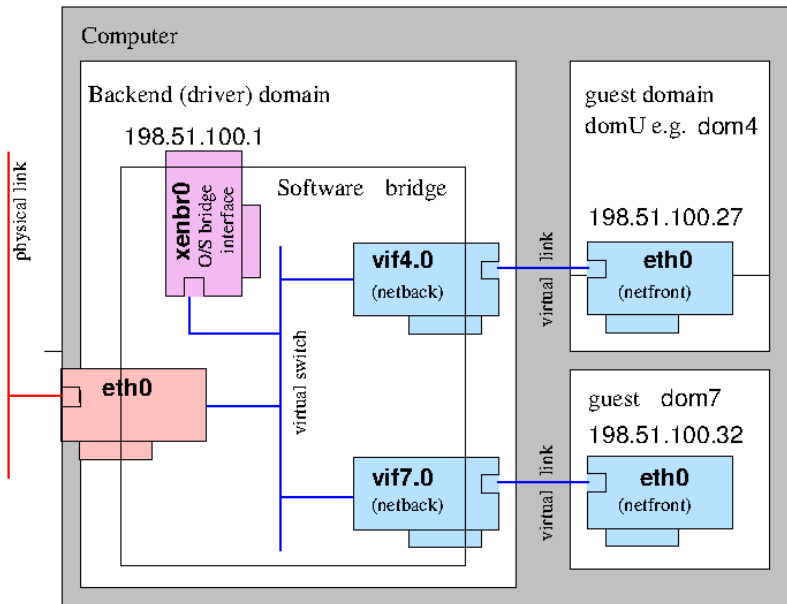
To see what these mean, we need a little background.

THREE NETWORKING OPTIONS

- ▶ Bridged networking
- ▶ Routing
- ▶ NAT

Bridged networking is the default.

Note that none of these networking schemes are provided by Xen. They are provided through the underlying capabilities of the Dom0 operating system.



HOW DID WE SET THIS UP?

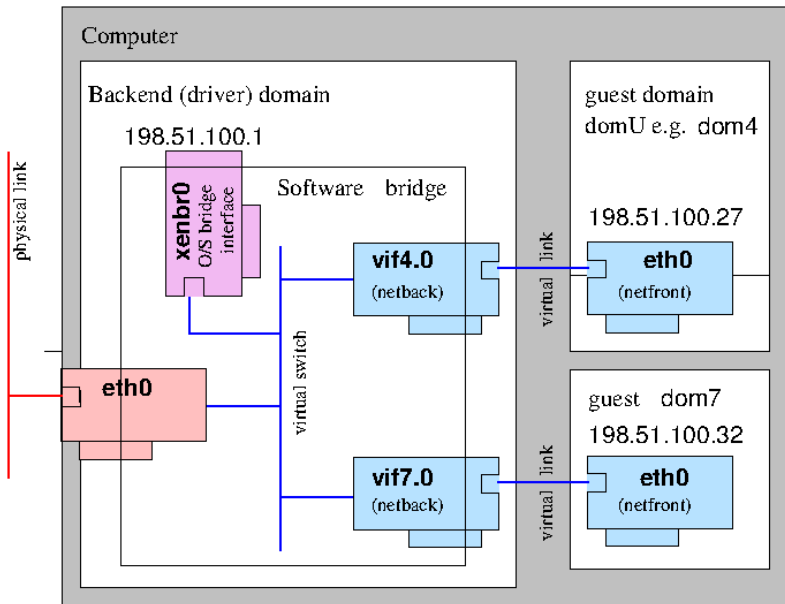
Recall that when we were installing Xen and setting up Dom0, we

- ▶ Installed `bridge-utils`;
- ▶ Configured the `xenbr0` interface;
- ▶ Removed the DHCP configuration from the `eth0` interface.

HOW DID WE SET THIS UP?

Then, every time we create a guest, the script specified by `vif.default.script` is run. This

- ▶ Sets up the `vif.X.0` interface on Dom0;
- ▶ Configures the `eth0` interface on the guest;
- ▶ Adds any needed bridging configuration.



ANOTHER BRIDGING OPTION

Instead of `bridge-utils`, we can use Open vSwitch to manage bridging on Dom0. This provided some more advanced bridging configuration options.

HOW DO WE USE ROUTING OR NAT?

- ▶ Eliminate the bridged interface and reconfigure Dom0's ethernet interface;
- ▶ Configure routing/NAT using the capabilities of the Dom0 OS;
- ▶ Change `vif.default.script`;
- ▶ Possibly change the guest configuration.

ABOUT THAT GUEST CONFIG

```
vif = [',']
```

This is actually Python code¹. `vif` is a list of strings. Each one is a comma-separated set of key/value pairs. Examples are

```
, ,  
'mac=00:16:3E:74:3d:76'  
'script=custom-bridging,bridge=xenbridge2'  
'ip=192.168.10.44'
```

See <http://xenbits.xen.org/docs/4.4-testing/misc/xl-network-configuration.html> for more information

¹No, it's not.

TODAY'S LAB

On your Xen host:

- ▶ Start/stop various combinations of your guests and use `ifconfig` on Dom0 to see how the list of interfaces changes. Note in particular the MAC addresses of the `vif` interfaces.
- ▶ Start one of your clone VMs and inspect its network settings. Modify the `vif` spec in its Xen configuration file to manually produce the same config. Stop and recreate the guest to check the results.
- ▶ Now experiment with some of the `vif` options in the configuration and test their effects on the guest. Note that you will have to stop and recreate the guest when you change the configuration.