

# Xen Networking

Virtualisation

Otago Polytechnic  
Dunedin, New Zealand

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"
```

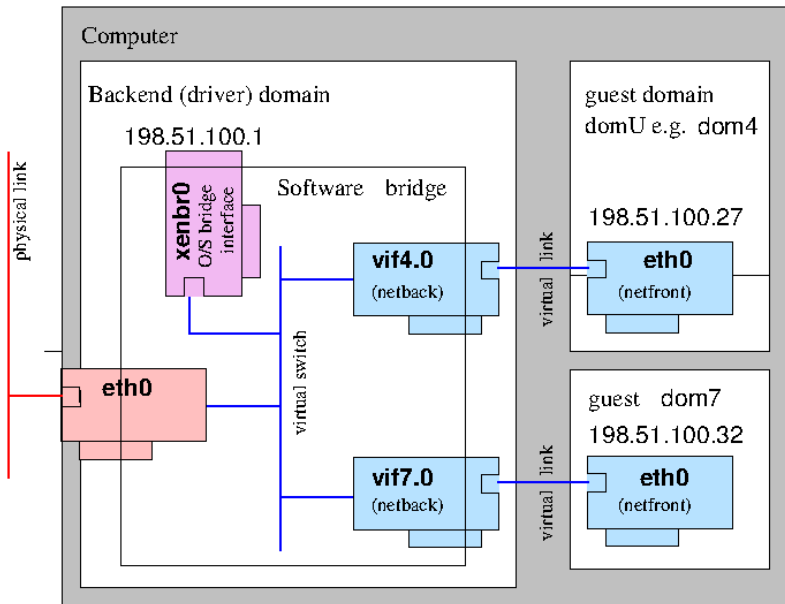
To see what these mean, we need a little background.

# 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?

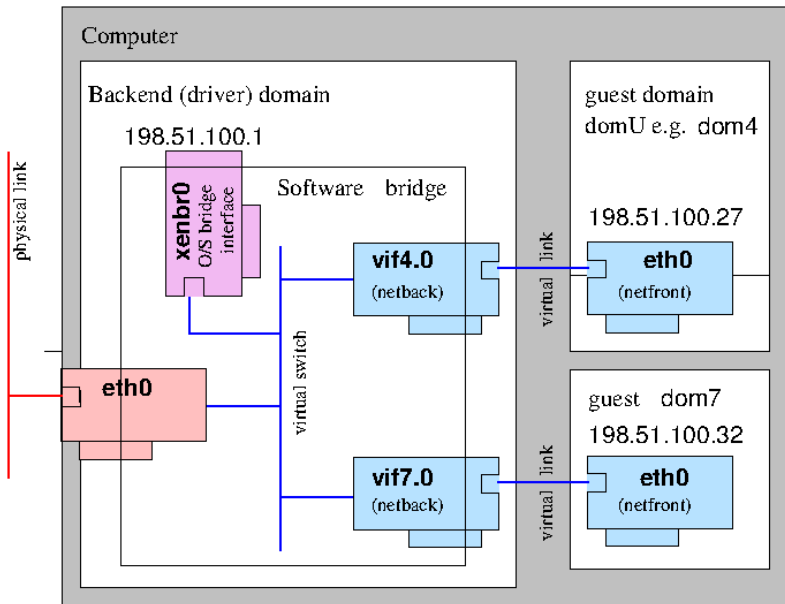
Recall that when we were installing Xen and setting up Dom0, we

- ▶ 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 code. `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/4.2-testing/misc/xl-network-configuration.html> for more information

# 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.
- ▶ Add a second bridged interface to your Dom0. Configure a guest to use it. Does it work? Does another guest using the original bridge still work? See if you can determine why or why not.