**Title: How to ping two virtual machines**

**Author: Aaron Valoroso**

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**OS: Ubuntu 16.10**

**Part 1:**

* Get the latest version of Virtual-box
* Create Two vms one master1, the other master2.
* Can be 10 GB in storage, and 2000 MB in RAM.
* Go to settings->General->Advanced
  + And change the Shared Clipboard to: Bidirectional
  + And change Drag’n’Drop to: Bidirectional
* Go to settings->System
  + Uncheck the floppy and move it down below hard disk.
* Go to settings->System->Processor
  + Make sure that the Enable PAE/NX is unchecked.
* Go to settings->Storage
  + Click the cd under Controller: IDE, and on the far right click the other cd and pick your virtual optical disk drive. This is where you can add your OS image.

**Part 2:**

* Go ahead and click the start button for both vms.
* Go through the basic install of Ubuntu and when it comes time to restart the OS, just click the X at the very top right and hit “Power off the machine”, not “Save the Machine State!”
* Go to Settings->System
  + Uncheck the Optical and move it below the hard disk like we did with the floppy in the first part.
* Go to Settings->Network->Adapter 2
  + Check the “Enable Network Adapter”
  + Click on Attached to: (scroll down to “Host-only Adapter”).
  + Click on the “Advanced”, very bottom, click on Promiscuous Mode: (scroll down to “Allow All”.
  + Hit OK.
  + Do this for both vms.
* Start the vms back up.

**Part 3:**

* If you run into any errors while trying to restart the vms from this point just keep trying to restart. Eventually they will startup.
* Let’s set root / su, just to make it easier, so type *sudo passwd* , and type in your original password and a new one if so pleased.
* The ifconfig command will show your network information. The enp0s3 is your NAT network adapter, the enp0s8 is your Host-Only Adapter, and the lo is the loopback device that comes on all virtual machines.
* Next be in su, do nano /etc/network/interfaces.
  + You should see something like this:
    - auto lo
    - iface lo inet loopback
  + You need to add this under the above input (make sure to leave a space):
    - auto enp0s8
    - iface enp0s8 inet static
    - address (if your ip is 10.0.2.15, you can do something like 10.0.0.10)
    - netmask 255.255.255.0
    - Use the example at the bottom of this document, but replace the eth0 with enp0s8, change the address, and nothing else after netmask.
  + For the other vms you need to do the same thing but with an address of 10.0.0.20 on your master2.
  + By now you can do a service networking restart, then ping 10.0.0.20 if you are on your master1 machine and ping 10.0.0.10 on your master2 machine. \* If this does not work please check your typing across the board, and make sure that your pinging the right machine. You will know when the ping starts to work. \*
  + Some debug statements would be *ifup* *enp0s8*, ifconfig, service networking restart, service ssh / sshd restart, and *service networking status*.

**Other:**

Here are some other commands and or knowledge that might be useful down the road. You can use this command for adding an IP address: *sudo ip ad add 10.0.0.10/24 dev eth0*, the /24 tells the computer that the last 8 bits of the 32 can change. You can just do the opposite as well with this command: *ip ad del 10.0.0.40/32 dev eth0*. With Virtual-Box you can port forward within the network settings. If you mess up your network and it’s not working correctly, try going into the network settings and reset the MAC address.

The NAT stands for network address translation, the NAT virtualizes the internet protocol and decreases the number of IP addresses an organization needs. The Host-only adapter can connect to multiple vms that are running on the same machine.

#Here is an example of setting up another static IP address

iface eth0 inet static

address 192.168.10.33

netmask 255.255.255.0

broadcast 192.168.10.255

network 192.168.10.0

gateway 192.168.10.254

dns-nameservers 192.168.10.254