NETROPYVE

INSTALLATION GUIDE

KVM USING COMMAND LINE

APPOSITE
TECHNOLOGIES

1 OVERVIEW

Objective: To install the NetropyVE product on KVM 1.5 through an example with the steps to connect the NetropyVE to two virtual machines contained within a single KVM hypervisor.

Requirements: libvirtd 3.5 and above. 2 VCPUs, & 8GB memory for the NetropyVE

Assumptions: The reader of the document is familiar with KVM, Virsh commands, & Linux environments and terminology. The reader already has two virtual machines built and ready to be integrated with the NetropyVE. IN this document all commands are run as root. If you are not going to run Virsh as root please make sure you have proper permissions to execute the below commands.

This Example: This document will show how to connect two virtual machines to the NetropyVE using the 2nd network cards configured to the virtual machines. The example virtual machines will be called "Los_Angeles" and "New_York" and be running Ubuntu18 server.

Example Diagram:
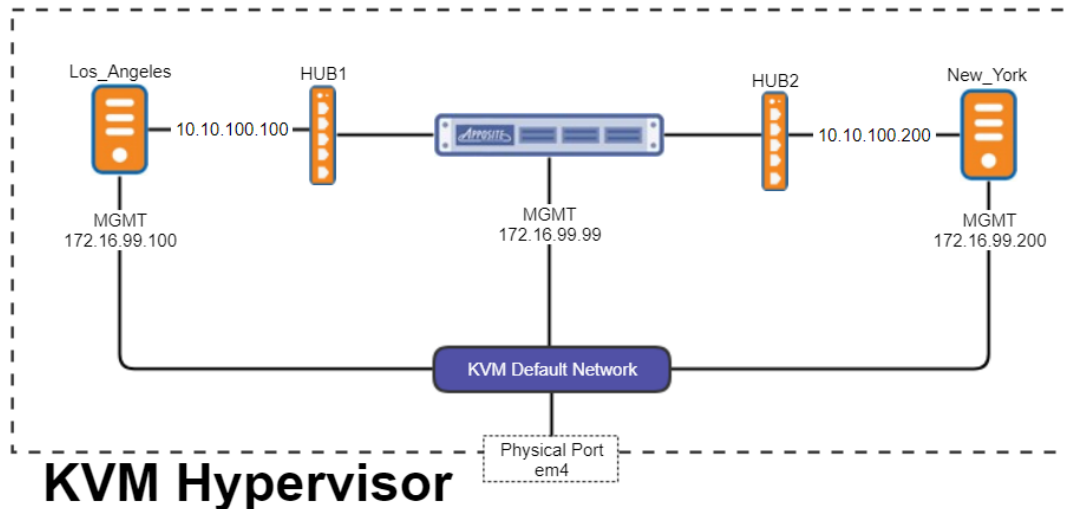
2 Steps

Step 1: Adding Virtual networks

NetropyVE will require two virtual networks to route TCP/IP traffic through the 2 emulation ports.

In the example above these two virtual networks are called "HUB1" & "HUB2." To create virtual networks creating an xml document is required.

Below is an example for creating the xml for HUB1. This requires the uuidgen package (yum/apt install uuid-runtime).

```
[root@daffy ~]# HUB1UUID=`uuidgen` && cat <<EOF > HUB1.xml
<network>
 <name>HUB1</name>
 <uuid>$HUB1UUID</uuid>
 <domain name="HUB1"/>
</network>
EOF
```

Repeat for HUB2

```
[root@daffy ~]# HUB2UUID=`uuidgen` && cat <<EOF > HUB2.xml
<network>
 <name>HUB2</name>
 <uuid>$HUB2UUID</uuid>
 <domain name="HUB2"/>
</network>
EOF
```

Define, start, and set autostart on HUB1 & HUB2 networks

```
[root@daffy ~]#  virsh net-define HUB1.xml
[root@daffy ~]#  virsh net-start HUB1
[root@daffy ~]# virsh net-autostart HUB1

[root@daffy ~]#  virsh net-define HUB2.xml
[root@daffy ~]#  virsh net-start HUB2
[root@daffy ~]# virsh net-autostart HUB2
```

You can check your networks:

```
[root@bugs ~]# virsh net-list
Name         State    Autostart  Persistent
--------------------------------------------------
default      active   yes        yes
HUB1         active   yes        yes
HUB2         active   yes        yes
```

Step 2: Install NetropyVE and Assign Networks

The following command will create a domain (VM) called "NetropyVE" with the following settings:

- Operating identification of Linux
- 8 GB of RAM
- 2 VCPUs
- Path to disk image: /VMs/netropy-ve-3.2-rc4-eval.qcow2 (this is the qcow that was provided for download by Apposite)
- Port0 (Management Port) connected to default KVM network
- Port1 connected to HUB1
- Port2 Connected to HUB2
- Import the image
- Set to autostart on boot

Command:

```
virt-install -n NetropyVE  --description "Apposite NetropyVE"\
 --os-type=Linux --ram=8192  --vcpus=2\
 --disk path=/VMs/netropy-ve-3.2-rc4-eval.qcow2,bus=sata,size=10,target=sda\
 --network=network:default,model=virtio\
 --network=network:HUB1,model=virtio\
 --network=network:HUB2,model=virtio --import --noautoconsole\
 --autostart
```

Once created check that the NetropyVE domain is running

```
[root@bugs ~]# virsh list
Id   Name            State
---------------------------------------------
1    NetropyVE       running
```

Verify NetropyVE has the correct network assignments

[root@bugs ~]# virsh dumpxml NetropyVE | grep -A2 "type='network'"

* <interface type='network'>*
* <mac address='52:54:00:f5:11:c1'/>*
* <source network='==default==' bridge='virbr0'/>*
--
* <interface type='network'>*
* <mac address='52:54:00:1a:27:e2'/>*
* <source network='==HUB1==' bridge='virbr1'/>*
--
* <interface type='network'>*
* <mac address='52:54:00:11:7c:1a'/>*
* <source network='==HUB2==' bridge='virbr2'/>*

Step 3: Console into the NetropyVE and set IP Information

[root@bugs ~]# virsh console NetropyVE
Connected to domain NetropyVE
Escape character is ^]

      Netropy VE Network Emulator
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Netropy login: admin

Login as "admin"

Set the IP Address or use DHCP

Static Address:
    [admin@netropy]> mgmt set addr 172.17.99.99 netmask 255.255.0.0
    [admin@netropy]> mgmt set gw 172.16.0.1
    [admin@netropy]> mgmt set nameserver 8.8.8.8 8.8.4.4

Or DHCP:
    [admin@netropy]> mgmt set addr dhcp
    [admin@netropy]> mgmt show
    Hostname: netropy
    Domain: (DHCP)
    Ethernet address: 52:54:00:f5:11:c1
    IP address: 192.168.122.87/255.255.255.0 (DHCP)
    Default route: 192.168.122.1 (DHCP)
    Name Servers: 8.8.8.8 8.8.4.4
   *NTP Servers: (DHCP)*

Type "logout" to log out of the console. To exit out of virsh console use "ctrl]"

Now that you have the IP set you should be able to access the NetropyVE through the GUI.
Enter the IP address into a web browser (Chrome is recommended).
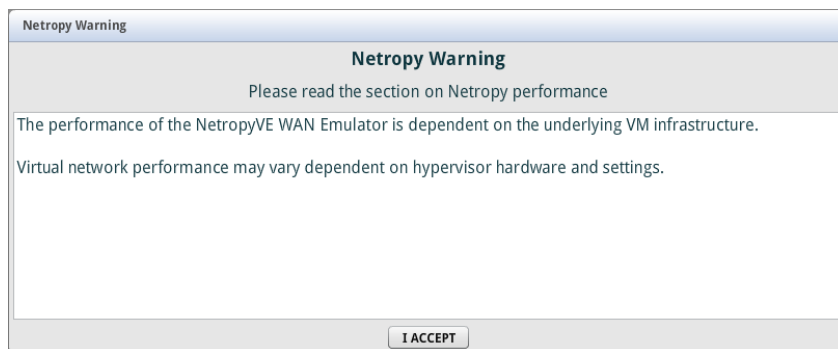
Step 4: NetropyVE Licensing

Open a web browser in the navigation window enter the IP address from the "mgmt show" command above.

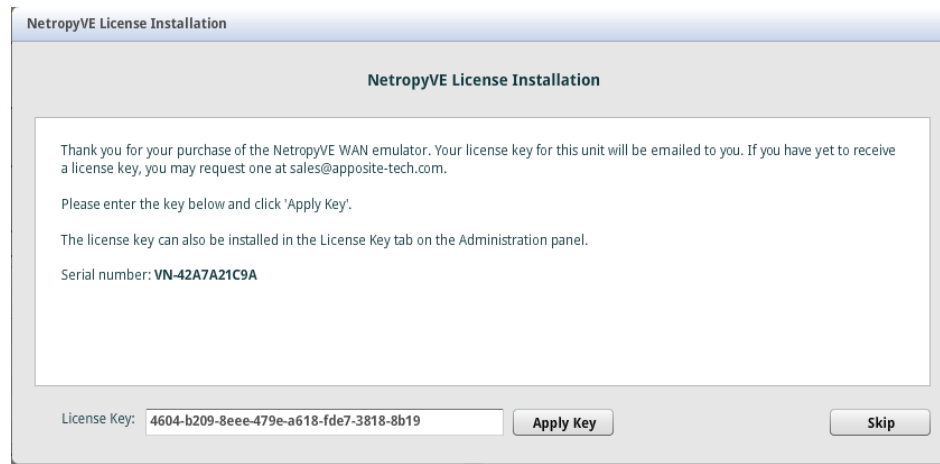You will be prompted to accept a license agreement:
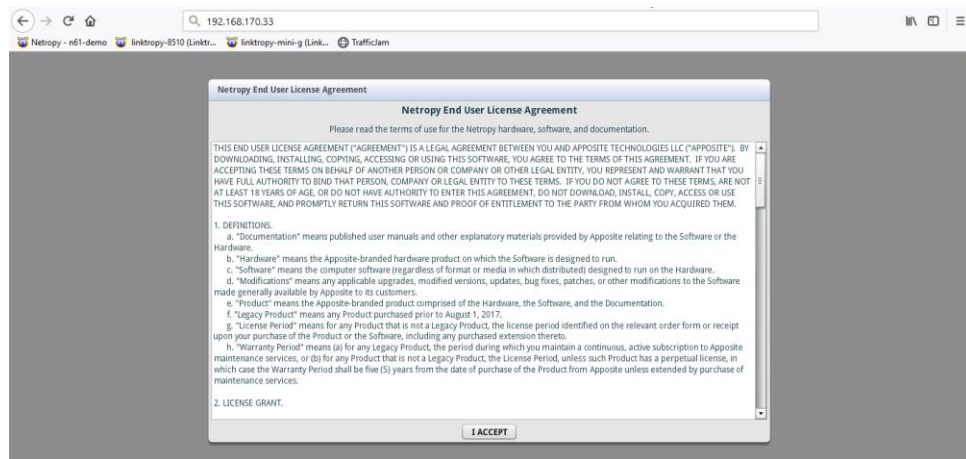
Click "I ACCEPT"

You will then get a Netropy Warning for network performance dependent on hardware:


Click "I ACCEPT"

The next popup will be for licensing:

Enter your license key and click "Apply Key"
If you do not have a Key please contact your Apposite Sales rep or sales@apposite-tech.com.

The NetropyVE needs access to the internet to validate your license.   If you do not have internet access you will get a "License Invalid" error.

It can take 10-30 seconds for the license to validate. Once Validated you will get a pop-up that's says, "Key loaded successfully."
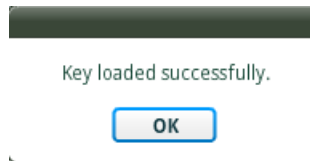

Step 5. Test Emulation

Configuring and testing NetropyVE

The easiest way to test the NetropyVE is with a simple ping from Virtual Machine LA to the Virtual Machine NYC.

- Login to the NetropyVE via http
- Click on "Unnamed Path"
  - At the top change the name of the path (this example "VM LA to VM NYC")
  - Set the "Bandwidth" of "WAN Access – Port 1" (this example is 1Gbps)
  - Under WAN set the Delay to constant on both "PORT 1 to PORT 2" and "PORT 2 to PORT 1" (in this example 40ms each)
  - Set the "Bandwidth" of "WAN Access – Port 2" (this example is 1Gbps)
  - Apply Changes
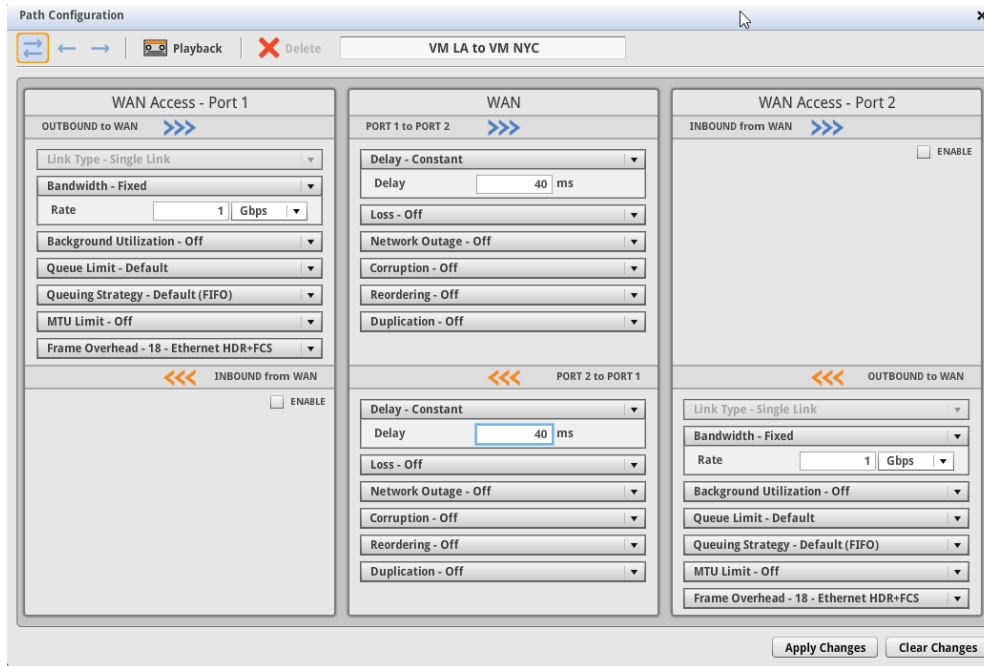
- Close the window and turn emulation to "on"
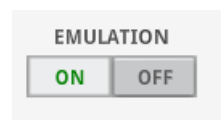
Emulation should now be on. When you ping from Los_Angeles to New_York using the 2nd Ethernet cards you should see latency: