

NETROPYVE INSTALLATION GUIDE

VERSION 4 AND ABOVE

KVM INSTALL 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.

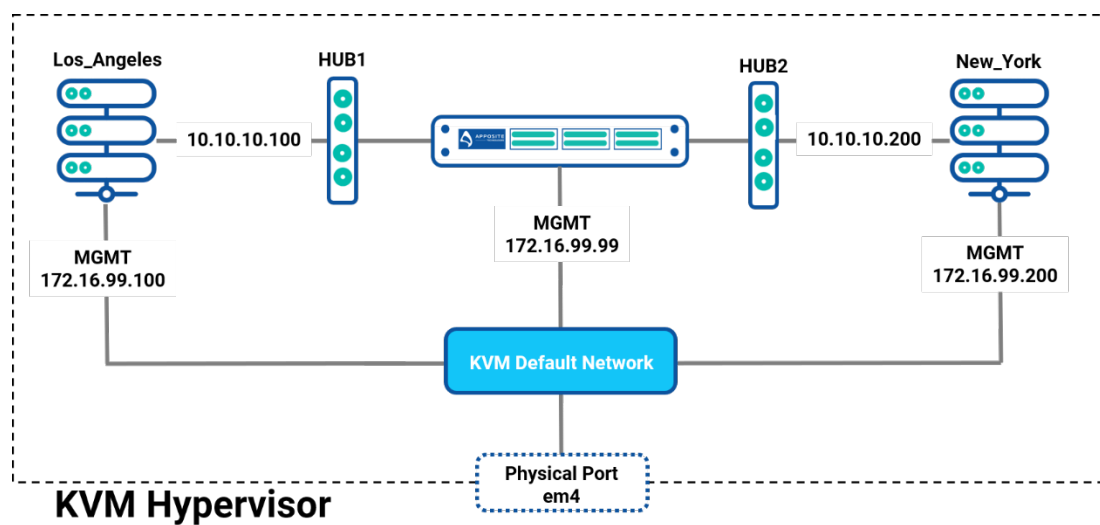
Requirements: libvirtd 3.5 and above. 2 VCPUs, & 8GB memory for the NetropyVE

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.

**Note – if copying and pasting command some characters may change. If a command does not seem to run please check that your copy and paste is not changing any characters.*

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.qcow2 (this is the qcow that was provided for download by Apposite)
- Additional HDD
- 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" \
--ram=8192 --vcpus=2 \
--osinfo detect=on,require=off \
--disk path=/VM/netropy-ve.qcow2,size=1 \
--import \
--network=network:default,model=virtio \
--network=network:HUB1,model=virtio \
--network=network:HUB2,model=virtio --import --noautoconsole \
--autostart \
```

If version 5.0.5 or later, at the end, add in:

```
--disk size=1
```

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
Copyright (c) 2010-2017 Aposite Technologies LLC
```

```
netropy login: admin
```

Login as "admin"

Password: "admin"

If DHCP is enabled Netropy will have acquired an ip address. You can check the IP address by running the following command:

```
[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)

To set 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
```

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).

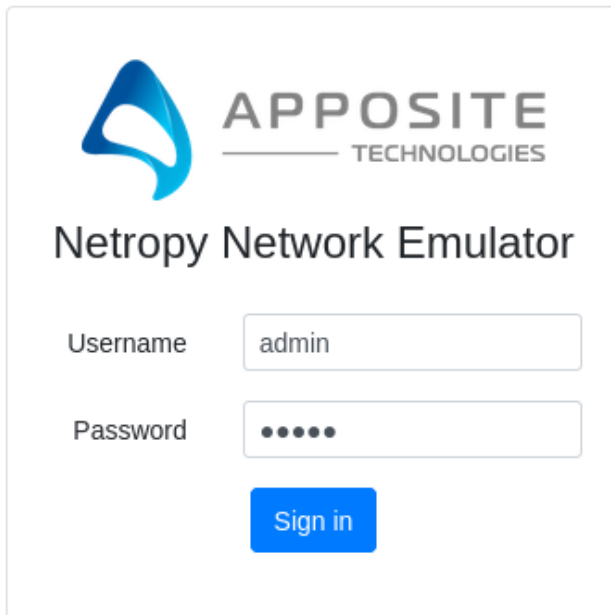
Step 4: NetropyVE Licensing

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

You will be prompted to login.

User: admin

Pass: admin



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Netropy Network Emulator

Username

Password

And to accept a license agreement:

Netropy End User License Agreement

Please read the terms of use for the Netropy hardware, software, and documentation.

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1. DEFINITIONS.

- a. "Documentation" means published user manuals and other explanatory materials provided by Apposite relating to the Software or the Hardware.
- b. "Hardware" means the Apposite-branded hardware product on which the Software is designed to run.
- c. "Software" means the computer software (regardless of format or media in which distributed) designed to run on the Hardware.
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- g. "License Period" means for any Product that is not a Legacy Product, the license period identified on the relevant order form or receipt upon your purchase of the Product or the Software, including any purchased

I ACCEPT

Click "I ACCEPT"

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

NetropyVE Warning

Please read the following section on NetropyVE performance

The performance of the NetropyVE WAN Emulator is dependent on the underlying VM infrastructure.
Virtual network performance may vary dependent on hypervisor hardware and settings.

I ACCEPT

Click "I ACCEPT"

The next popup will be for licensing:

Netropy License Expired

The license on this unit has expired. To renew the license, please contact your Apposite reseller or the Apposite sales team at renewals@apposite-tech.com.
For more information on license renewals, see the Apposite website at <https://www.apposite-tech.com/renewals>.

To install a new license, please enter the license key below and click 'Apply Key'. The license key can also be entered from the License Key tab on the Administration panel.

Serial number: **VN-320959B1B6**

License Status: **Missing or Invalid**

License Key

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 click “Close”

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 the gear icon next to “Default Path”
 - At the top change the name of the path (this example “VM LA to VM NYC”)
 - Set the “Bandwidth” of “Port 1 – Access Emulation” (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 “Port 2 – Access Emulation” (this example is 1Gbps)
 - Apply Changes

Topology / Path / Manage Playback VM LA to VM NYC Delete Path Apply Changes

Outbound to WAN

Bandwidth Gbps

Background Utilization

Queue Limit

Queue Strategy

MTU Limit

Frame Overhead

Port 1 to Port 2

Delay

Latency ms

Loss

Network Outage

Corruption

Reordering

Duplication

Inbound from WAN ENABLED

ENABLED Inbound from WAN

Port 2 to Port 1

Delay

Latency ms

Loss

Network Outage

Corruption

Reordering

Duplication

Outbound to WAN

Bandwidth Kbps

Background Utilization

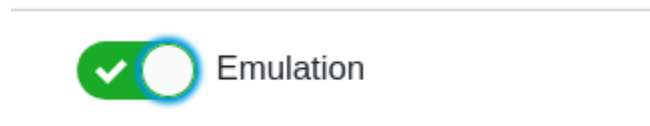
Queue Limit

Queue Strategy

MTU Limit

Frame Overhead

- Click on “Topology” in the left side of your screen 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:

```

appo@los_angeles:~$ ping 10.10.100.200
PING 10.10.100.200 (10.10.100.200) 56(84) bytes of data.
64 bytes from 10.10.100.200: icmp_seq=1 ttl=64 time=80.9 ms
64 bytes from 10.10.100.200: icmp_seq=2 ttl=64 time=80.7 ms
64 bytes from 10.10.100.200: icmp_seq=3 ttl=64 time=80.3 ms
64 bytes from 10.10.100.200: icmp_seq=4 ttl=64 time=82.4 ms

```

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