

NTGVE

INSTALLATION GUIDE

VMWARE WALKTHROUGH



APPOSITE  
— TECHNOLOGIES

# 1 OVERVIEW

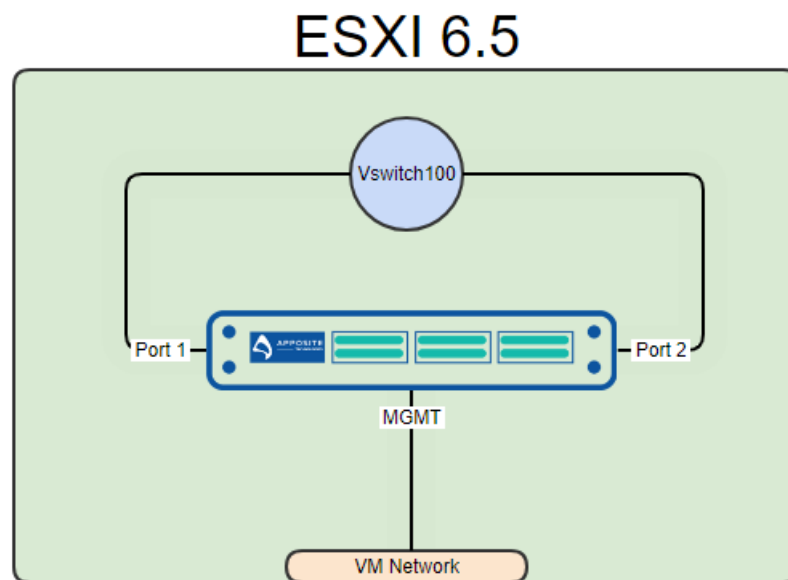
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**Objective:** To install the NTGVE product on ESXI 6.5 or higher through an example with the steps to connect the NTGVE in a loopback configuration in a single ESXI server.

**Assumptions:** The reader of the document is familiar with ESXI environment and terminology.

**This Example:** This document will show how to provision an NTGVE instance and connect through a virtual switch in a "loopback" configuration. Port 0 will send to port 1. This configuration is recommended for beginner users to validate environment and configurations.

Example Diagram:



# 2 STEPS

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## Step 1: Add Virtual Switches

NTGVE will require 1 virtual switch to send and receive generated traffic.

- Log in to your ESXI server and choose "Networking" in the Navigator pane
- Choose the "Virtual Switches" tab
- Then "Add a standard virtual switch"
  - Give the switch a name (vSwitch100 in this example)
  - Remove the uplink port
  - Click the security arrow
    - Accept "Promiscuous mode" "Mac address changes" & "Forged Transmits"  
\*\*\*VERY IMPORTANT \*\*\*
  - Click "Add"

Add standard virtual switch - vSwitch100	
Add uplink	
vSwitch Name	vSwitch100
MTU	1500
▶ Link discovery	Click to expand
▼ Security	
Promiscuous mode	<input checked="" type="radio"/> Accept <input type="radio"/> Reject
MAC address changes	<input checked="" type="radio"/> Accept <input type="radio"/> Reject
Forged transmits	<input checked="" type="radio"/> Accept <input type="radio"/> Reject
Add Cancel	

## Step 2: Create Port Group

Assign the port groups to the new vSwitches you just created.

- In the Navigator pane click on "Networking"
- Choose the "Port Group" tab
- Then "Add Port Group"
  - Name the port group ("Port Group 100" in this example)
  - Virtual Switch: vSwitch100
  - Click Add

Add port group - Port Group 100	
Name	Port Group 100
VLAN ID	0
Virtual switch	vSwitch100
▼ Security	
Promiscuous mode	<input type="radio"/> Accept <input type="radio"/> Reject <input checked="" type="radio"/> Inherit from vSwitch
MAC address changes	<input type="radio"/> Accept <input type="radio"/> Reject <input checked="" type="radio"/> Inherit from vSwitch
Forged transmits	<input type="radio"/> Accept <input type="radio"/> Reject <input checked="" type="radio"/> Inherit from vSwitch
<input type="button" value="Add"/> <input type="button" value="Cancel"/>	

## Step 3: Install NTGVE

You must have a valid OVA file provided by Apposite Technologies.

- In the Navigator pane choose "Virtual Machines"
- Then "Create / Register VM"
  - Choose "Deploy a virtual machine from an OVA file"
  - Then click "Next"
    - Enter a name (In this example we use "NTGVE")
    - Click or "Drag/Drop" the .ova supplied by Apposite
    - Then click "Next"
    - Select the datastore you wish to run the NTGVE from
    - Then click "Next"
      - Under Network mapping **\*\*\*VERY IMPORTANT\*\*\***

- VM Network – Choose the Network for management IPs
- Test Network A – Choose “Port Group 100”
- Test Network B – Choose “Port Group 100”
- Click Next
- Please ensure the “Power on automatically” check box is unchecked
- Now click Finish
- Add a second hard disk (greater than 32GB) to save configuration data. The size of the disk needed depends on the features being used and can be increased later.

## Deployment options

Select deployment options

Network mappings	VM Network	VM Network
	TestNetwork-1	Port Group 100
	TestNetwork-2	Port Group 100
Disk provisioning	<input checked="" type="radio"/> Thin <input type="radio"/> Thick	
Power on automatically	<input type="checkbox"/>	

For NTG4VE, assign a port group to all 8 network interfaces under network mappings.

## Deployment options

Select deployment options

Network mappings	VM Network	VM Network
	Test Network 1	pg-tgen-1
	Test Network 2	pg-tgen-1
	Test Network 3	pg-tgen-2
	Test Network 4	pg-tgen-2
	Test Network 5	pg-tgen-3
	Test Network 6	pg-tgen-3
	Test Network 7	pg-tgen-4
	Test Network 8	pg-tgen-4
Disk provisioning	<input checked="" type="radio"/> Thin <input type="radio"/> Thick	
Power on automatically	<input type="checkbox"/>	

## Step 4: Set the IP on the NTGVE

By default, the NTGVE acquires its management IP address via DHCP. You can set the NTGVE to a static IP address. You will need console access to configure the TCP/IP settings.

- In the Navigator pane choose "Virtual Machines"
- Choose the "NTGVE" virtual machine
- Click on console
  - Login: admin
  - Password: admin

Find IP Address:

```
mgmt show
```

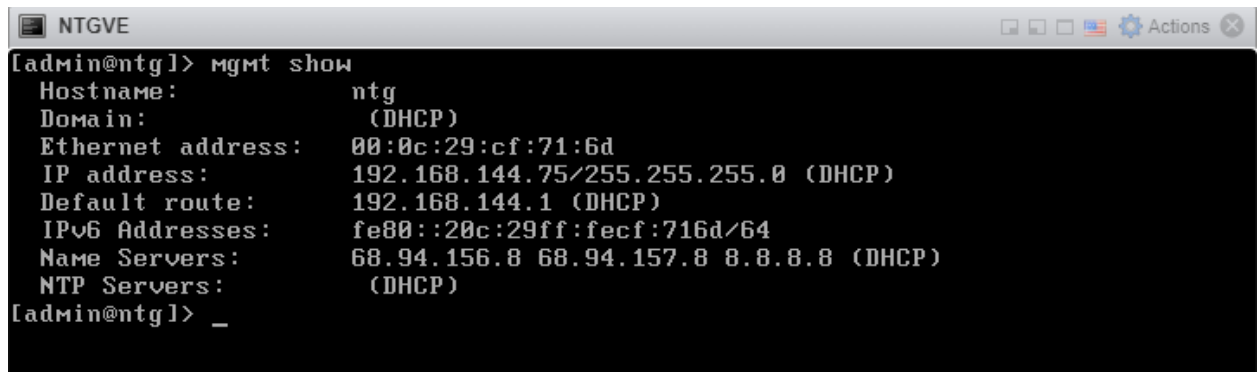
To set Static IP/route type in:

```
mgmt set addr 192.168.170.33 netmask 255.255.255.0
```

```
mgmt set gw 192.168.170.1
```

To see that the settings have taken effect type

```
mgmt show
```



```
NTGVE [admin@ntg]
[admin@ntg] > mgmt show
Hostname:          ntg
Domain:           (DHCP)
Ethernet address: 00:0c:29:cf:71:6d
IP address:       192.168.144.75/255.255.255.0 (DHCP)
Default route:    192.168.144.1 (DHCP)
IPv6 Addresses:   fe80::20c:29ff:fe80:716d/64
Name Servers:     68.94.156.8 68.94.157.8 8.8.8.8 (DHCP)
NTP Servers:      (DHCP)
[admin@ntg] > _
```

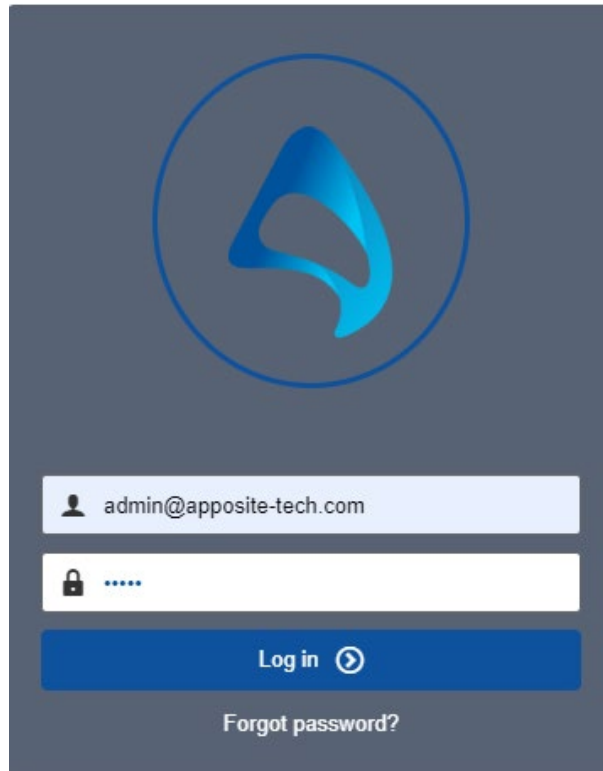
You should now be able access the NTGVE GUI interface by typing the IP address into a browser.

Type "logout" to log out of the console.

## Step 5: NTGVE Licensing

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

You will be prompted for a login:

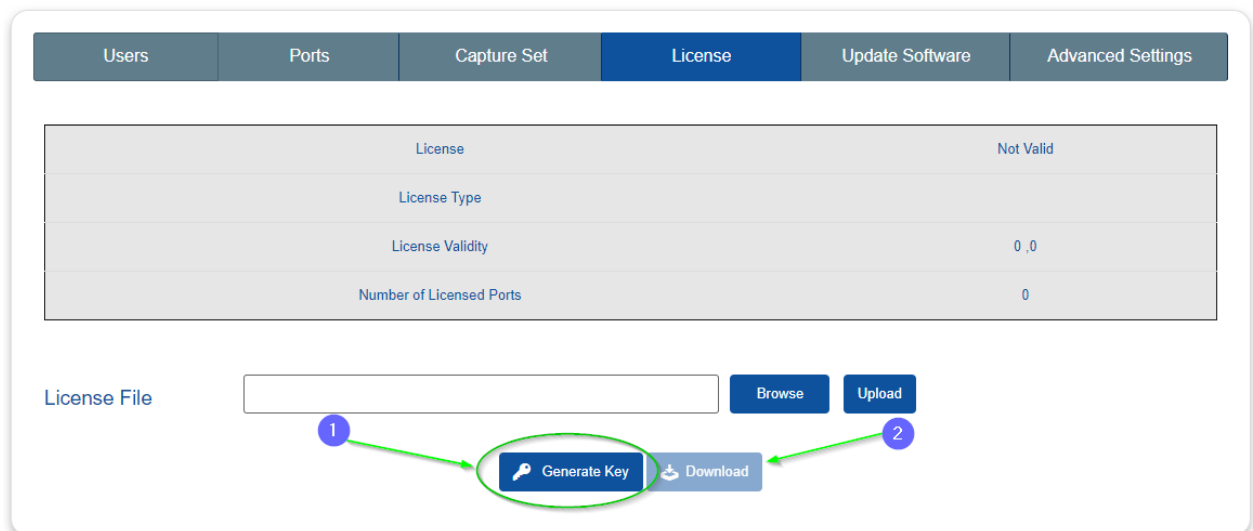


Authenticate using:

User: [admin@apposite-tech.com](mailto:admin@apposite-tech.com)

Password: admin

Navigate to: Management -> License -> click "Generate key" at the bottom



Then download the key file

Please send the key file to [support@apposite-tech.com](mailto:support@apposite-tech.com) to obtain a valid license.

Once you have obtained the license file from Apposite, save it, and use the "Upload" button to load the license.

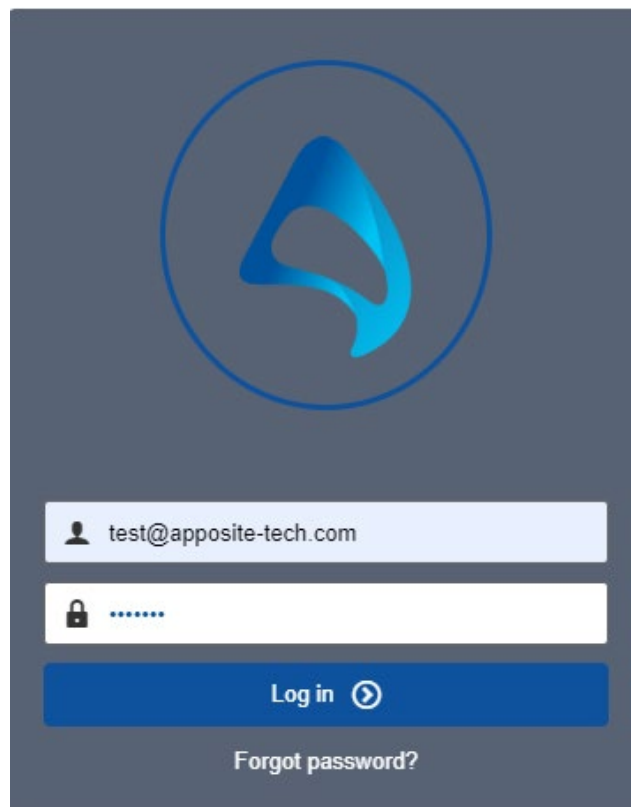
\*You may need to refresh the page to see the license has taken effect.

Log out of the Admin account by clicking on the Admin icon on the upper right side of your screen and choosing "Logout".

## Step 6: Configuring and Testing NTGVE for a Simple TrafficEngine Test

The easiest way to test the NTGVE is with a simple UDP test using TrafficEngine.

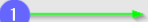

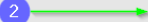

- Log in to the NTGVE
  - User: [test@apposite-tech.com](mailto:test@apposite-tech.com)
  - Password: test123



- Reserve port 0 and 1 for your tests
- Create Testbed

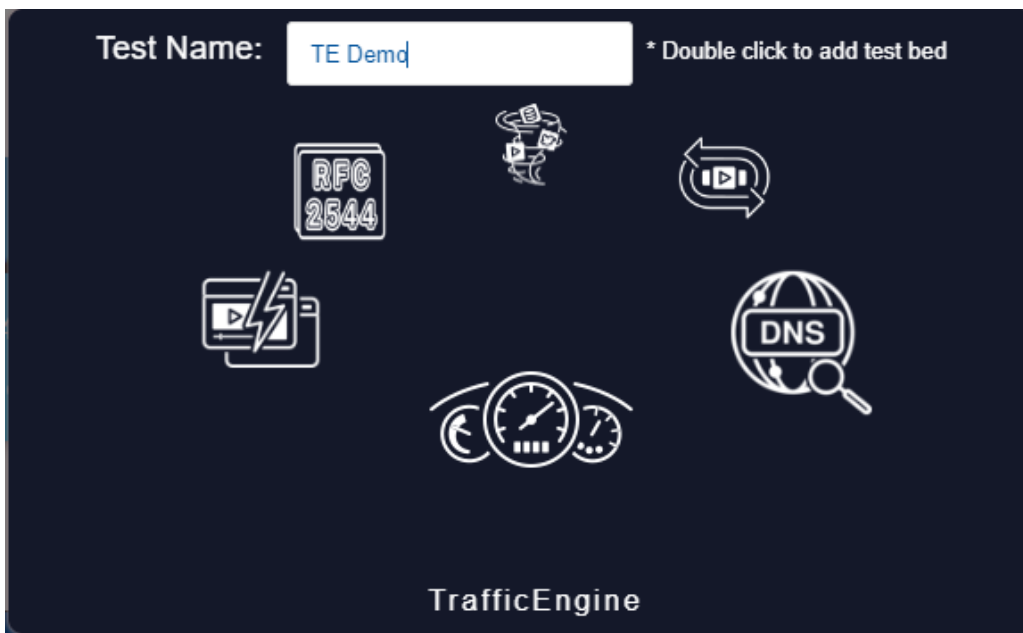


## Ports

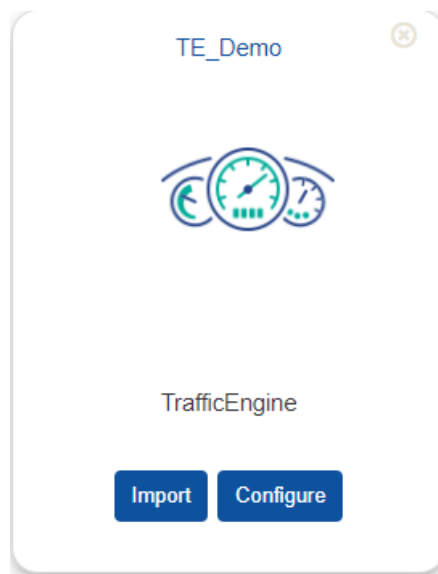
Ports ID	Status	MAC Address	IP Address	Reserved By	Active Feature	Test Name	Test Status	Reserve/Release
0	UP	00:0c:29:cf:71:77	localhost	Test			1 	
1	UP	00:0c:29:cf:71:81	localhost	Test			2 	

3  

- Give your testbed a name (this example "TE Demo")
- DoubleClick on the "TrafficEngine" icon to create a testbed



- Click "Configure" on the Testbed you just created



- Add the two ports to your tests
- It is recommended you bring the bandwidth down to 500Mbps on your first test

Port Configuration      Host Configuration      Stream Configuration      Traffic Configuration      Summary

Ports ID	Link	MAC Address	Bandwidth Utilization	Configured Line Rate	Metric Unit	Mode	Port Mapping	Port Status
0	UP	00:0c:29:cf:71:77	50%	500	Mbps	TX and RX	Port 1	Remove from Test
1	UP	00:0c:29:cf:71:81	50%	500	Mbps	TX and RX	Port 0	Remove from Test

Next

- Click next
- Set the CIDR block to /32 for both ports

**P0 Host Configuration**

Src Mac Address: Random

Src Start Mac Address: 00:0c:29:cf:71:77 Mac Increment Factor: 1

Encapsulation Type: None

Src IP Address: Random

Src Start IP Address: 10.0.0.2 / 32 IP Increment Factor: 1

Dest IP Address: 20.0.0.2

Gateway:

Hosts: 1

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**P1 Host Configuration**

Src Mac Address: Random

Src Start Mac Address: 00:0c:29:cf:71:81 Mac Increment Factor: 1

Encapsulation Type: None

Src IP Address: Random

Src Start IP Address: 20.0.0.2 / 32 IP Increment Factor: 1

Dest IP Address: 10.0.0.2

Gateway:

Hosts: 1

- Click Next
- Click "Add Stream"



- Stream Name: UDP
- Search: UDP
- Checkmark: UDP
- Add

**Select Stream**

Stream Name: UDP

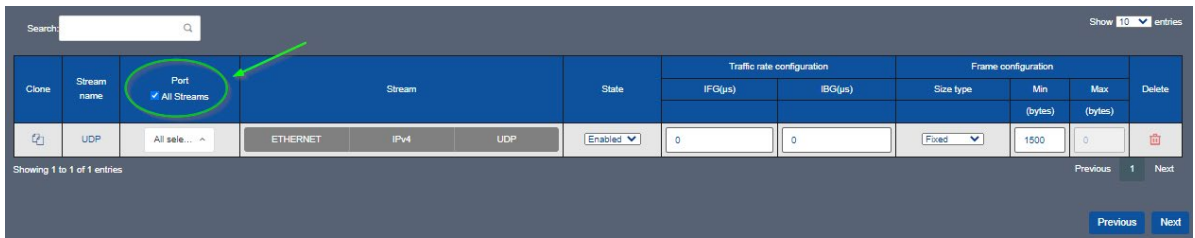
Search Stream: UDP

Pre-Defined Streams

- UDP - User Datagram Protocol

Buttons: Delete, Add

- Checkmark "Port All Streams"
- Then click "Next"



- Click "Next" in the Traffic Configuration
- Click "Start Test" in the Summary

If all is configured correctly you should see traffic sending and receiving on both ports. Verify stats are increasing:

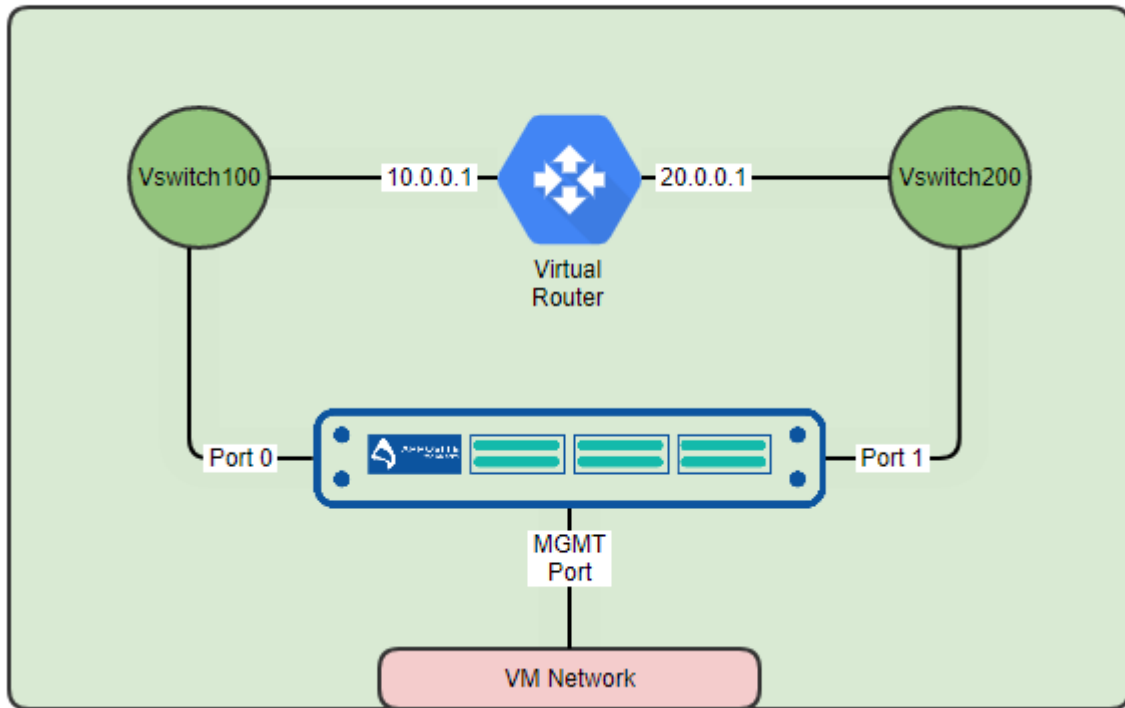


### 3 ADDING A VIRTUAL ROUTER

**Assumptions:** The reader has already completed steps 1-6 documented above. Reader has access and can configure virtual routers.

Example Diagram:

# ESXI 6.5




## 4 STEPS


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### Step 1: Add Another Virtual Switch

- Log in to your ESXI server and choose "Networking" in the Navigator pane
- Choose the "Virtual Switches" tab

- Then "Add a standard virtual switch"
  - Give the switch a name (VSwitch200 in this example)
  - Remove the uplink port
  - Click the security Arrow
    - Accept "Promiscuous mode" "Mac address changes" & "Forged Transmits"
      - \*\*\*VERY IMPORTANT \*\*\***
  - Click "Add"

 **Add standard virtual switch - VSwitch200**


 Add uplink

<b>vSwitch Name</b>	<input style="width: 90%;" type="text" value="VSwitch200"/>
<b>MTU</b>	<input style="width: 90%;" type="text" value="1500"/>
▶ <b>Link discovery</b>	Click to expand
▼ <b>Security</b>	
<b>Promiscuous mode</b>	<input checked="" type="radio"/> Accept <input type="radio"/> Reject
<b>MAC address changes</b>	<input checked="" type="radio"/> Accept <input type="radio"/> Reject
<b>Forged transmits</b>	<input checked="" type="radio"/> Accept <input type="radio"/> Reject

## Step 2: Create Port Group

Assign the port groups to the new vSwitches you just created.

- In the Navigator pane click on "Networking"
- Choose the "Port Group" tab
- Then "Add Port Group"
  - Name the port group ("Port Group 200" in this example)
  - Assign to the Virtual switch "vSwitch200"
  - Click Add

 Add port group - Port Group 200

Name	<input type="text" value="Port Group 200"/>
VLAN ID	<input type="text" value="0"/>
Virtual switch	<input type="text" value="VSwitch200"/>
▼ Security	
Promiscuous mode	<input type="radio"/> Accept <input type="radio"/> Reject <input checked="" type="radio"/> Inherit from vSwitch
MAC address changes	<input type="radio"/> Accept <input type="radio"/> Reject <input checked="" type="radio"/> Inherit from vSwitch
Forged transmits	<input type="radio"/> Accept <input type="radio"/> Reject <input checked="" type="radio"/> Inherit from vSwitch


### Step 3: Move NTGVE Ports to Use the New Switch

NTGVE needs to have port 1 moved to VSwitch200/Port Group 200.

- In the "Navigator" pane choose "Virtual Machines"
  - Choose NTGVE
    - Right click and select "Edit Settings"
  - Set Network Adapter 3 to "Port Group 200"
  - Save

## Edit settings - NTGVE (ESXi 5.5 virtual machine)

 Add hard disk  Add network adapter  Add other device

▶ CPU	6	
▶ Memory	16384	MB
▶ Hard disk 1	1000	MB
▶ SATA Controller 0		
▶ USB controller 1	USB 2.0	
▶ Network Adapter 1	VM Network	<input checked="" type="checkbox"/> Connect
▶ Network Adapter 2	Port Group 100	<input checked="" type="checkbox"/> Connect
▶ Network Adapter 3	Port Group 200	<input checked="" type="checkbox"/> Connect
▶ Video Card	Specify custom settings	

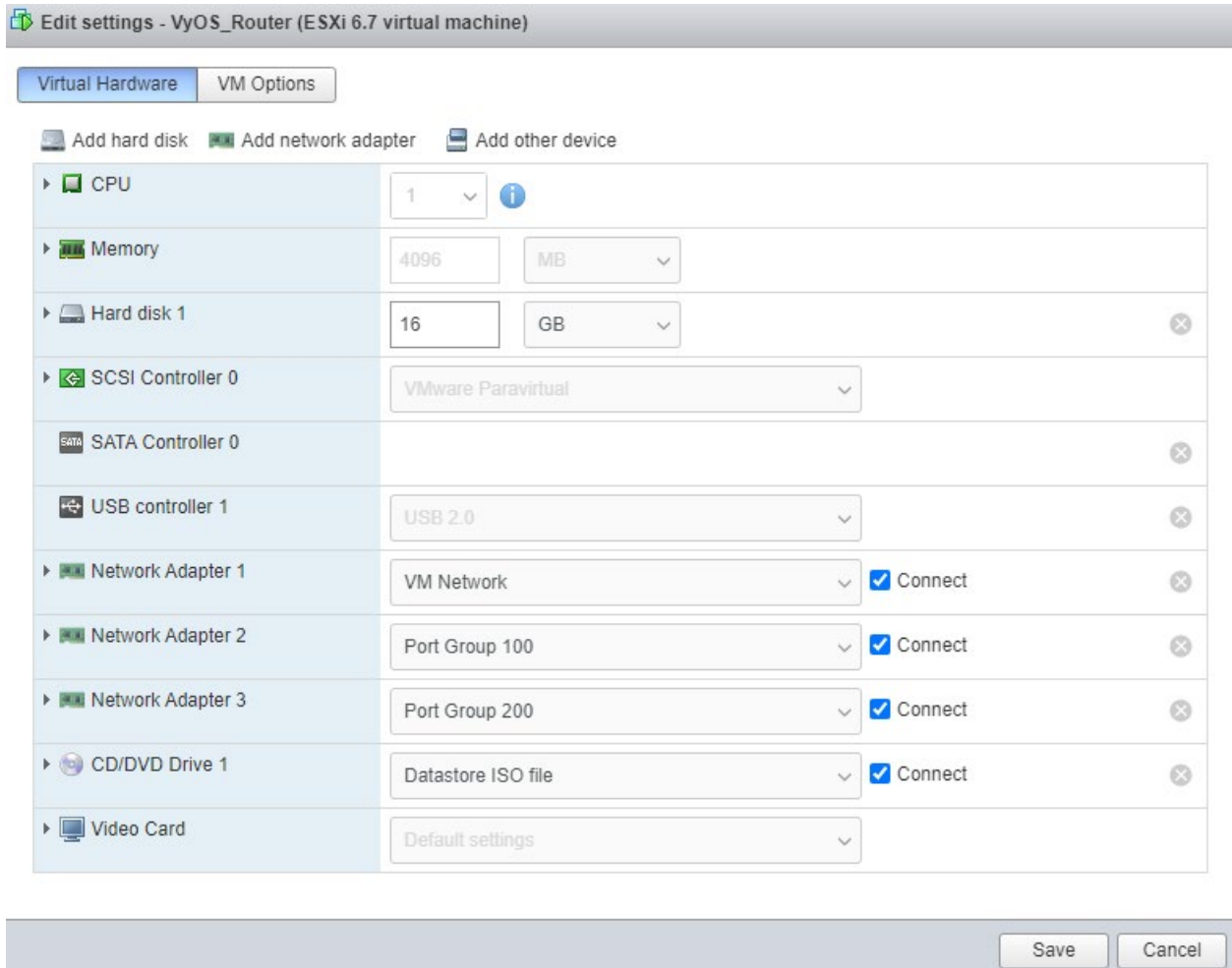
Save

Cancel

## Step 4: Assign Your Virtual Router Ports

- In the "Navigator" pane choose "Virtual Machines"
  - Choose <Your Virtual Router> instance (This example is "VyOS\_Router")
  - Right click and select "Edit Settings"
  - Assign the ports on your virtual router you wish to route your NTGVE traffic to "Port Group 100" and "Port Group 200"
  - Save





## Step 5: Configure Your Router So It Can Route Traffic

In this example we are using VyOS\_Router with the following configuration

Eth0: 192.168.144.63 – VM Network

Eth1: 10.0.0.1/24 - Port Group 100

Eth2: 20.0.0.1/24 - Port Group 200

```

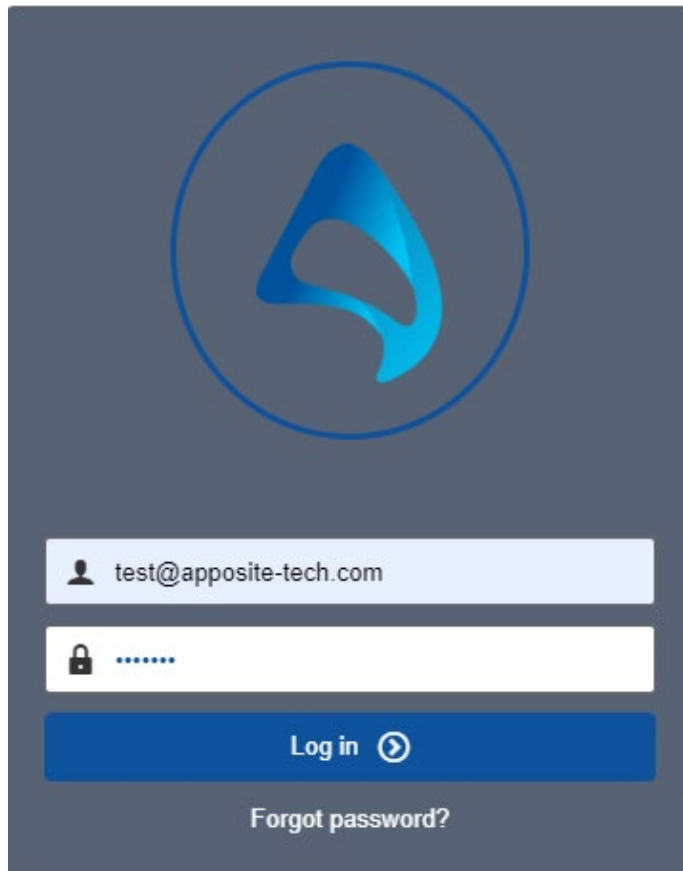
VyOS_Router
vyos@VyOS-Router:~$ show interfaces
Codes: S - State, L - Link, u - Up, D - Down, A - Admin Down
Interface      IP Address      S/L  Description
-----
eth0           192.168.144.63/24  u/u
eth1           10.0.0.1/24      u/u
eth2           20.0.0.1/24      u/u
lo             127.0.0.1/8      u/u
              ::1/128
vyos@VyOS-Router:~$

```

## Step 6: Configure the NTGVE TrafficEngine Test to Use the Virtual Router

Log in to the NTGVE

- User: [test@apposite-tech.com](mailto:test@apposite-tech.com)
- Pass: test123



- Reserve port 0 and 1 for your tests
- Create Testbed

### Ports [↻](#)

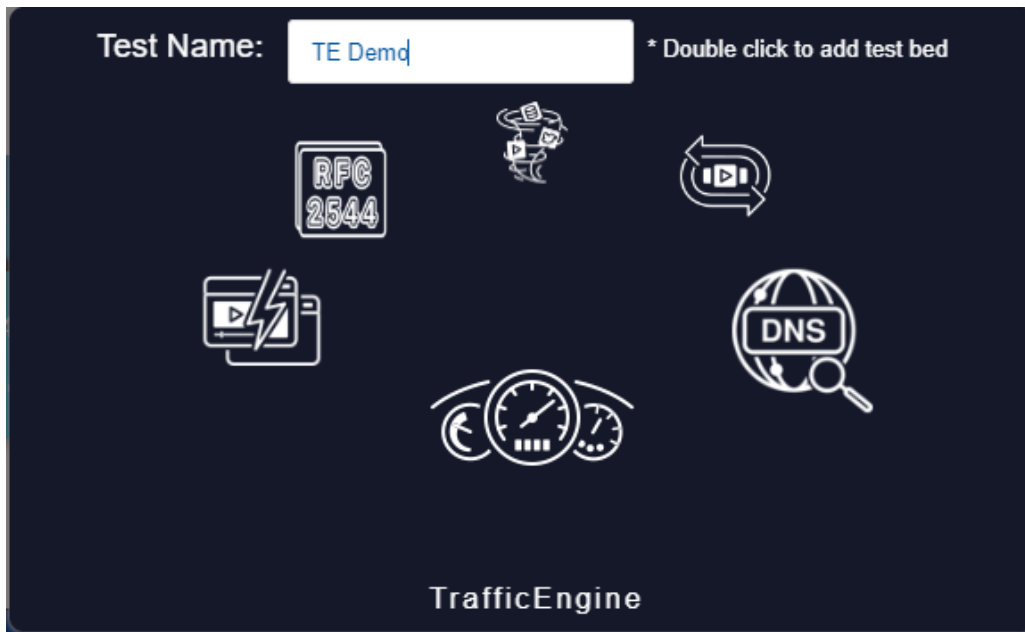
Ports ID	Status	MAC Address	IP Address	Reserved By	Active Feature	Test Name	Test Status	Reserve/Release
0	UP	00:0c:29:cf:71:77	localhost	Test			1 →	<input checked="" type="checkbox"/>
1	UP	00:0c:29:cf:71:81	localhost	Test			2 →	<input checked="" type="checkbox"/>



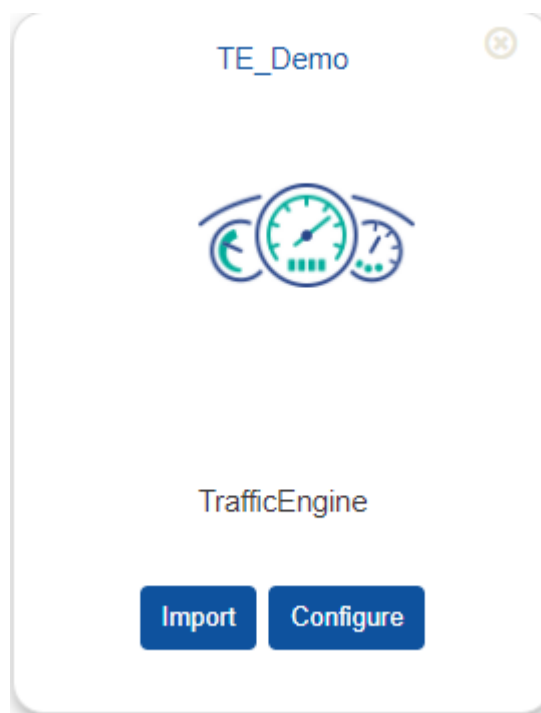
N

- Give your testbed a name (this example "TE Demo")

- DoubleClick on the "TrafficEngine" icon to create a testbed



- Click "Configure" on the Testbed you just created



- Add the two ports to your test
- It is recommended you bring the bandwidth down to 500Mbps on your first test

Ports ID	Link	MAC Address	Bandwidth Utilization	Configured Line Rate	Metric/Unit	Mode	Port Mapping	Port Status
0	UP	00:0c:29:cf:71:77	50%	500	Mbps	TX and RX	Port 1	Remove from Test
1	UP	00:0c:29:cf:71:81	50%	500	Mbps	TX and RX	Port 0	Remove from Test

Next

- Click next
- Set the CIDR block to /32 for both ports
- Check the Gateway Box
  - Set the Gateway for port 0 to be 10.0.0.1
  - Set the Gateway for port 1 to be 20.0.0.1

**P0 Host Configuration**

Src Mac Address: Random

Src Start Mac Address: 00:0c:29:cf:71:82 Mac Increment Factor: 1

Encapsulation Type: None

Src IP Address: Random

Src Start IP Address: 10.0.0.2 → 32 IP Increment Factor: 1

Dest IP Address: 20.0.0.2

Gateway:  GW IP Address: 10.0.0.1

**P1 Host Configuration**

Src Mac Address: Random

Src Start Mac Address: 00:0c:29:cf:71:81 Mac Increment Factor: 1

Encapsulation Type: None

Src IP Address: Random

Src Start IP Address: 20.0.0.2 → 32 IP Increment Factor: 1

Dest IP Address: 10.0.0.2

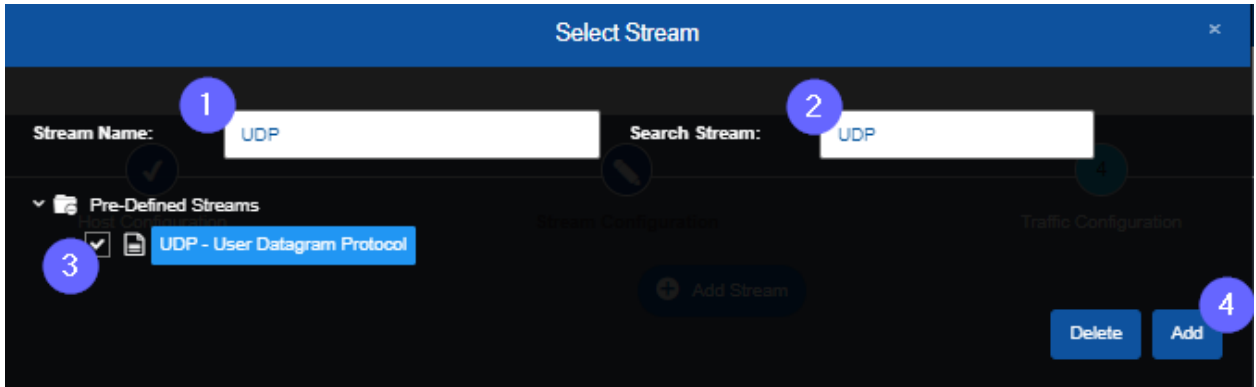
Gateway:  GW IP Address: 20.0.0.1

Hosts: 1

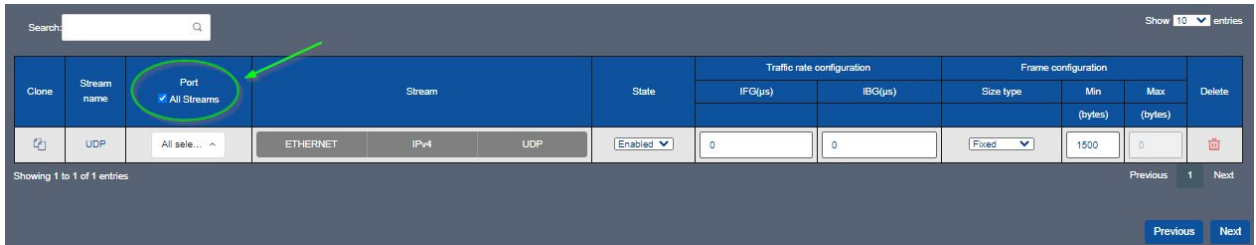
- Click Next
- Click "Add Stream"



- Stream Name: UDP
- Search: UDP
- Checkmark: UDP
- Add



- Checkmark "Port All Streams"
- Then click "Next"



- Click "Next" in the Traffic Configuration
- Click "Start Test" in the Summary

If everything is configured correctly, you should see traffic sending and receiving on both ports. Verify stats are increasing:





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