

VALIDATED REFERENCE DESIGN GUIDE

VMWARE NSX-V AND 8325 INTEGRATION

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INTRODUCTION

This document provides guidance on setting up VMware NSX-V and 8325 integration. This integration provides L2 network connectivity between Virtual Machines attached to NSX logical switches and bare metal servers or other devices on the physical network.

ArubaOS-CX 10.3 on 8325, vSphere 6.7 and NSX 6.4.5 were used in the creation of this guide.

8325/NSX-V certification is currently planned for ArubaOS-CX 10.4.

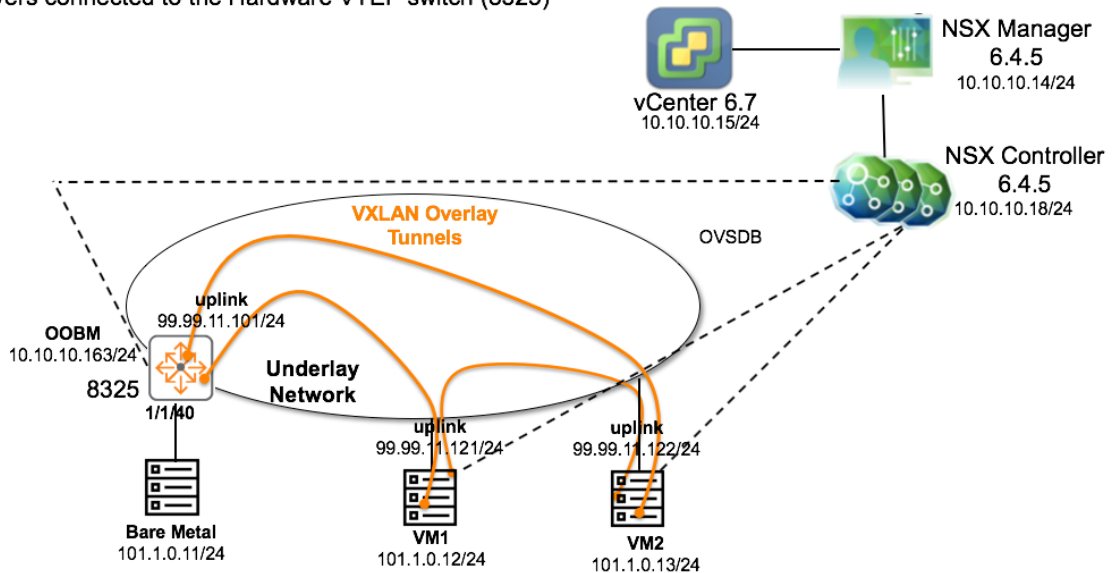
Figure 1 describes the network topology that will be used in this document:

- An Out Of Band (OOB) management network (10.10.10.0/24) is used for communication between the vCenter/NSX manager and NSX controller nodes. The 8325 must communicate with the NSX controller through the OOB management port.
- The in band underlay network (99.99.11.0/24) is used for connectivity between the VXLAN Tunnel End Points (VTEPs), the data plane VXLAN tunnels utilize this network for VM and Bare Metal (BM) network connectivity. The underlay network can be a L2 or L3 network.
- The virtual network (101.1.0.0/24) is used for connectivity between VMs and BM.

Figure 1. Network Topology

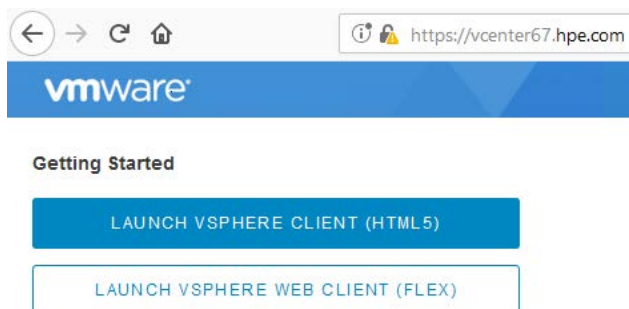
VMware NSX-V 8325 Integration

- Provides L2 network connectivity between VMs (on ESXi hosts) and Bare Metal Servers connected to the Hardware VTEP switch (8325)



Requirements

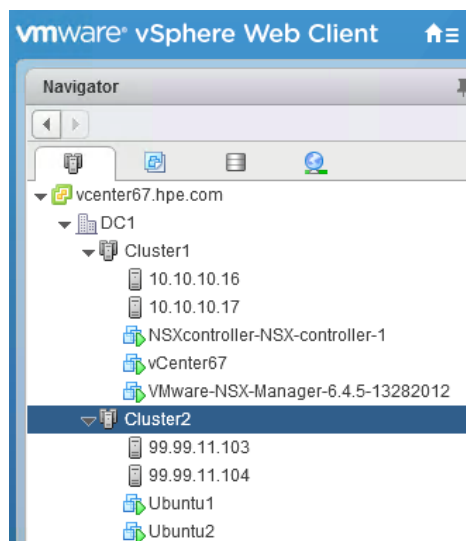
- Ensure DNS and NTP server infrastructure are in place
 - all devices (ESXi host, vCenter, NSX manager, NSX controller, 8325 etc) should point to these
 - NTP is in sync on these devices
 - DNS resolution between devices should work (all devices should have DNS host entries)
- VMware NSX-V should be deployed according to instructions stated here
 - <https://docs.vmware.com/en/VMware-NSX-Data-Center-for-vSphere/index.html>
- Utilize the flash based web client (FLEX) instead of HTML 5, some NSX features only exist in the FLEX client



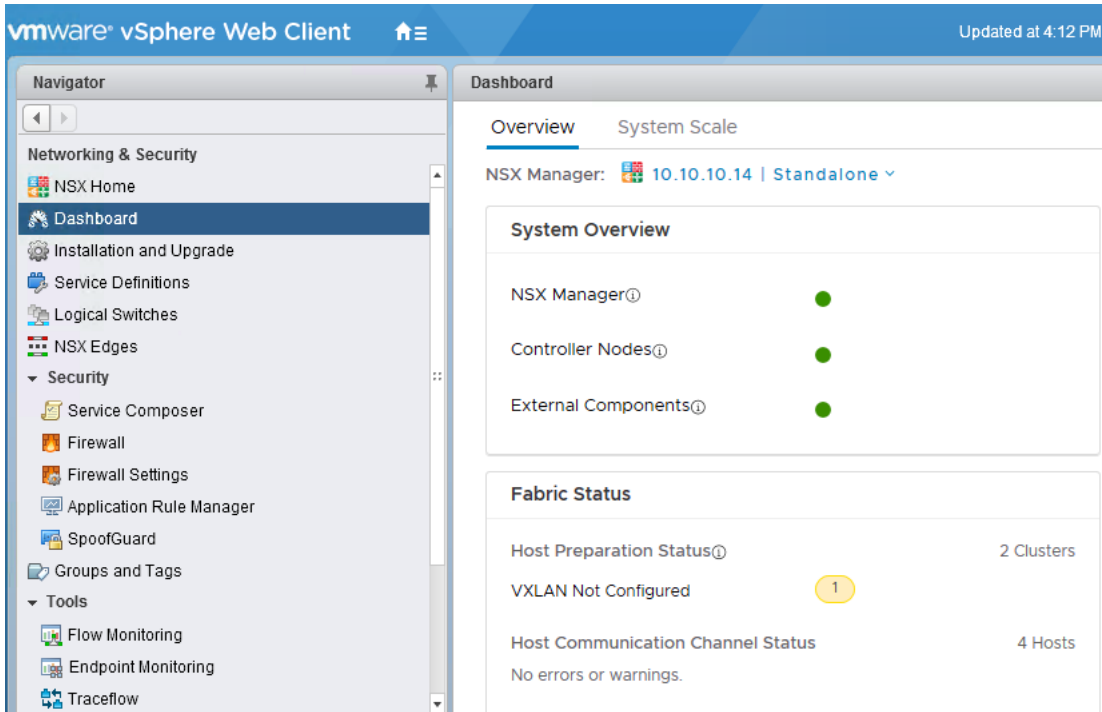
- A distributed vSwitch is required for NSX-V

vSphere information for reference

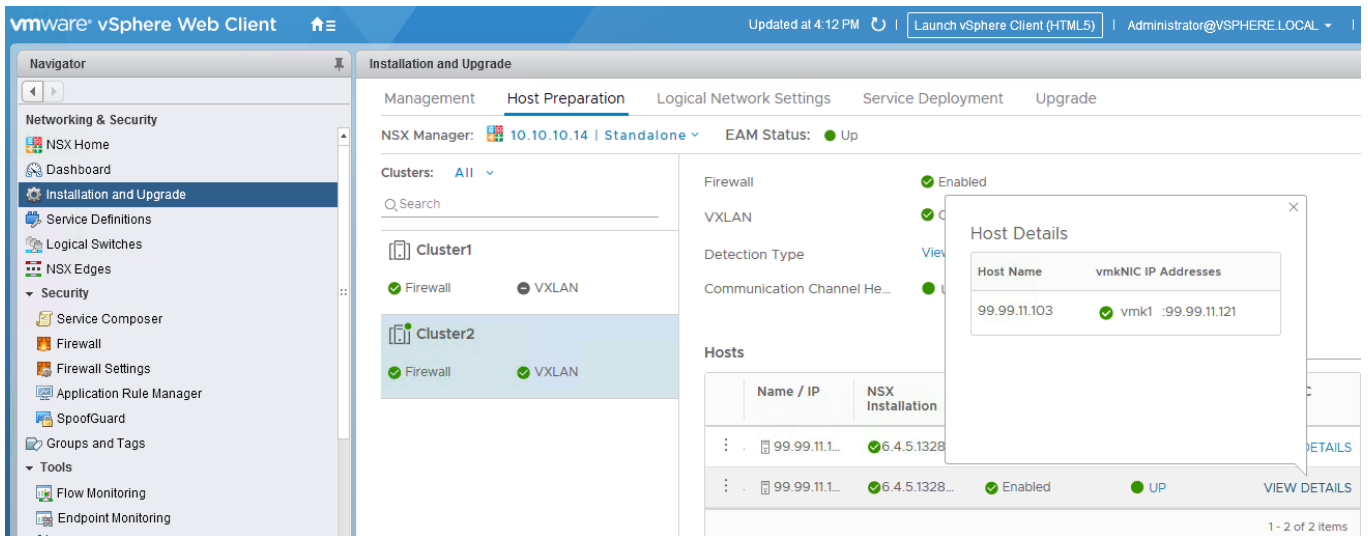
- I built 2 clusters
 - Cluster1 hosts the vCenter NSX Manager and NSX controller nodes
 - Cluster2 hosts the VTEPs and VMs



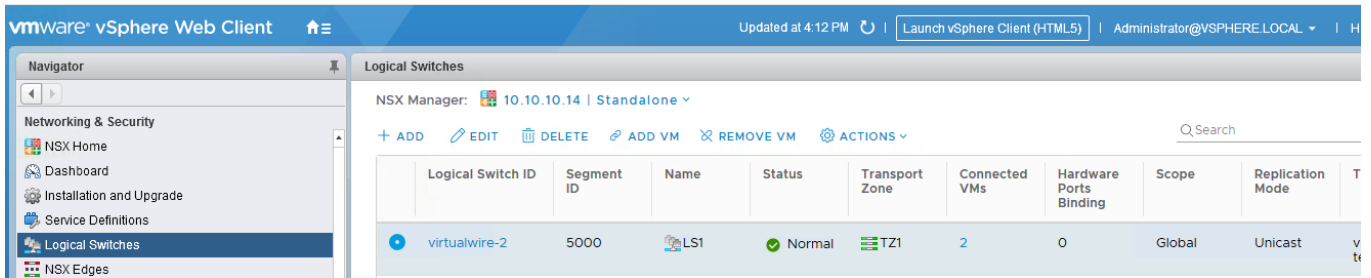
- NSX system overview (VXLAN is only required on the VTEP cluster)



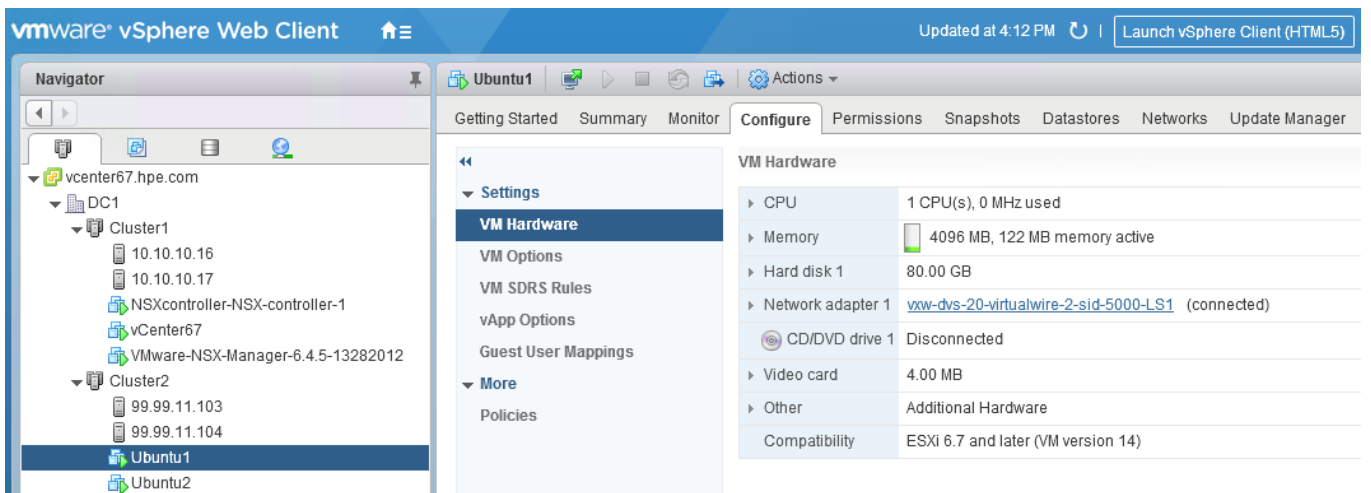
- VTEP info



- Logical switch in NSX for VMs and BM



- Logical switch attached to VM



8325 configuration and verification

Here is 8325 configuration used to integrate with NSX-V.

```
hostname 8325-R1-RU30
user admin group administrators password ciphertext AQBapbLslLppa
clock timezone us/pacific
ntp server 10.10.10.254
ntp enable
ntp vrf mgmt
!
ssh server vrf mgmt
!
! Cert to be created for NSX-V integration
crypto pki application hsc certificate local-cert
!
vlan 1
spanning-tree config-name 54:80:28:fd:a4:00
interface mgmt
  no shutdown
  ip static 10.10.10.163/24
  default-gateway 10.10.10.254
! interface group 4 contains ports 1/1/37-1/1/48
system interface-group 4 speed 10g
interface 1/1/40
```

```

! Port to Bare Metal server
  no shutdown
  no routing
  vlan access 1
interface 1/1/43
! Uplink to underlay network
  no shutdown
  ip address 99.99.11.101/24
!
! A loopback IP with routing enabled and able to communicate with the other VTEPs
! can also be used as source IP of int vxlan 1
interface vxlan 1
  source ip 99.99.11.101
  no shutdown
  vni 5000
  vlan 1
! The vni stated here should match the logical switch created in NSX-V
! The VLAN should be mapped to ports connected to the bare metal server
!
https-server rest access-mode read-write
https-server vrf mgmt
hsc
! The IP below refers to the NSX controller IP, do not point to the NSX manager IP
  manager ip 10.10.10.18
  enable

```

You can validate connectivity to the NSX controller using pings through the VRF

```

8325-R1-RU30# ping 10.10.10.18 vrf mgmt
PING 10.10.10.18 (10.10.10.18) 100(128) bytes of data.
108 bytes from 10.10.10.18: icmp_seq=1 ttl=64 time=0.463 ms
108 bytes from 10.10.10.18: icmp_seq=2 ttl=64 time=0.672 ms
108 bytes from 10.10.10.18: icmp_seq=3 ttl=64 time=0.538 ms

```

Copy 8325 cert info from

```
show crypto pki certificate local-cert pem
```

Ensure there are no spaces in front, here is an example of my 8325 cert

```

-----BEGIN CERTIFICATE-----
MIIDlZCCAn+gAwIBAgIIorTi4eTYgP8wDQYJKoZIhvcNAQELBQAwazEdMBSGA1UE
AwUc3dpdGNoLFNOPVRXOTNLTTAwMVkxCzAJBgNVBAYTAlVTMRIwEAYDVQQHDA1S
b3Nldm1sbGUxCzAJBgNVBAGMAkNBMQwwCgYDVQQKDANIUEUxDjAMBGNVBAAsMBU
FydWJhMB4XDTE4MTEyNTA2MDC1M1oXDTQ4MTEyNTA2MDC1M1owazEdMBSGA1UE
AwUc3dpdGNoLFNOPVRXOTNLTTAwMVkxCzAJBgNVBAYTAlVTMRIwEAYDVQQHDA1S
b3Nldm1sbGUxCzAJBgNVBAGMAkNBMQwwCgYDVQQKDANIUEUxDjAMBGNVBAAsMBU
FydWJhMIIBIjANBgkqhkiG9w0BAQEFAAOCAQ8AMIIBCgKCAQEaUlXYIuxOvx4PFm8P
EsBc vWGb/G8v5Mb04g1ENzULE53S1rZVEdxVanj0EVYkmuHlRNV+6e jQ9lJQB
fCC8Pev eLFif+myTetzSZQV/itBuqQSu4CtaPVLooBlgrfEEg6itJUwLn//j0pr7
+gVLRdN DPNqzwWu35BTIHjmylMXTcn1Bsxn/QR4JvPKK2FSTTmJbXWgN/YVwIJB
GSw13Ovm 5y8JvYkevlvTR2uiHjd3zwsn3JeP76Uh7HgmD4I38IHKbtWVKmvEq2u4K5
QtwGZG TyqU4msAbizH32mg9UwF3WvPzkGog6GidGUDjS/f3q+4OdKJmXL5zaCBzIKdZr35
lwIDAQABoz8wPTAMBgNVHRMBAf8EAjAAMA4GA1UdDwEB/wQEAwIF4DAdBgNVHSUE
FjAUBggrBgEFBQcDAQYIKwYBBQUHAWIwDQYJKoZIhvcNAQELBQADggEBAIUa+O2i
WRH8onUZ0fGHUQXkCCOWfUCudxiVz+/1Jd6XJVXM8If5i1/P25cTwgFvKukdyFcA
Ctvgalrywa4vSTggjDyM0C3jABoMysJdiKD1XFDAeU3K7HyAui6p44QiL0nI30qa

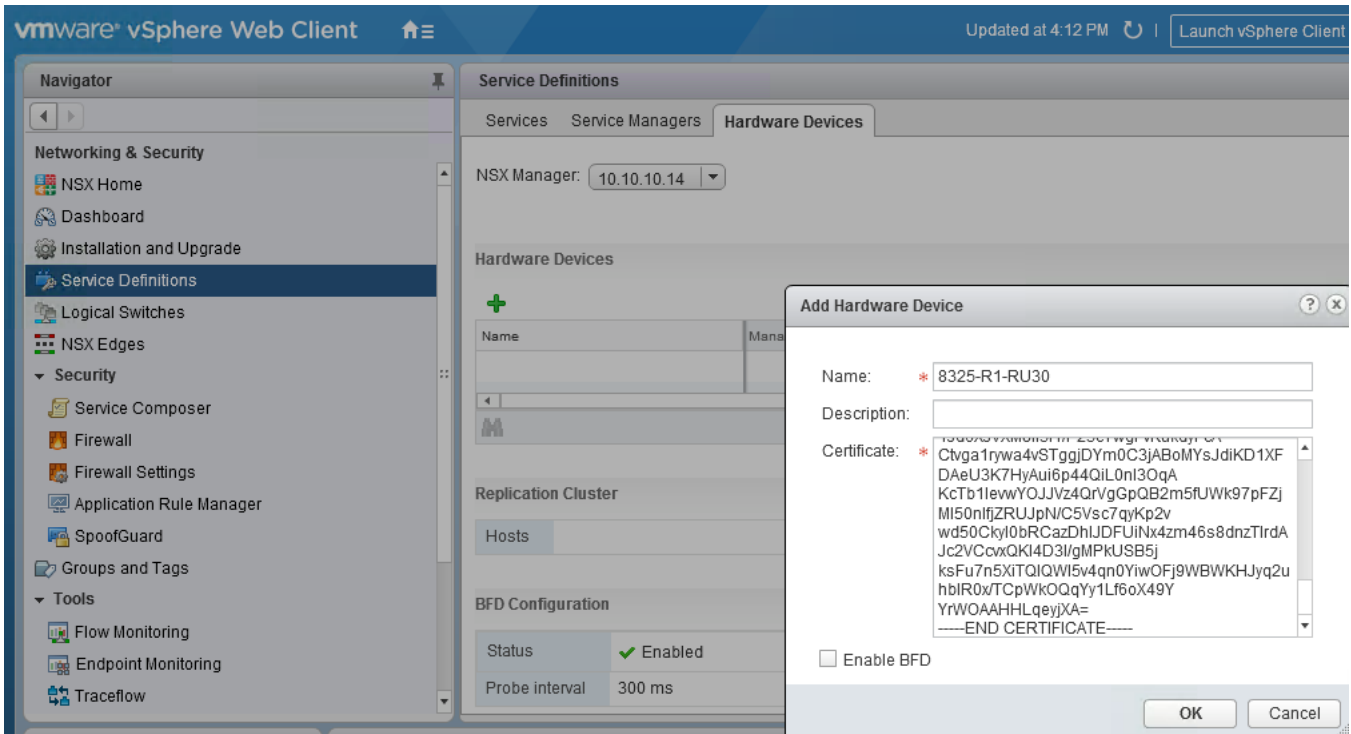
```

```
KcTb1IevwYOJJVz4QrVgGpQB2m5fUWk97pFZjMI50nIfjZRUIpN/C5Vsc7qyKp2v  
wd50CkyI0bRCazDhIJDFUiNx4zm46s8dnzTlrdAJc2VCcvxQKI4D3I/gMPkUSB5j  
ksFu7n5XiTQlQWl5v4qn0YiwOFj9WBWKHJyq2uhblR0x/TCpWkOQqYy1Lf6oX49Y  
YrW0AAHHLqeyjXA=  
-----END CERTIFICATE-----
```

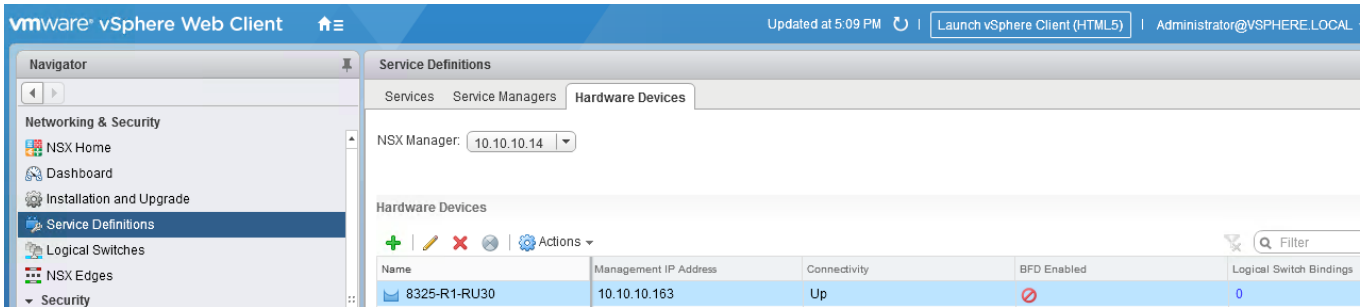
NSX-V Configuration

Navigate to “Networking and Security -> Service Definitions -> Hardware Devices”

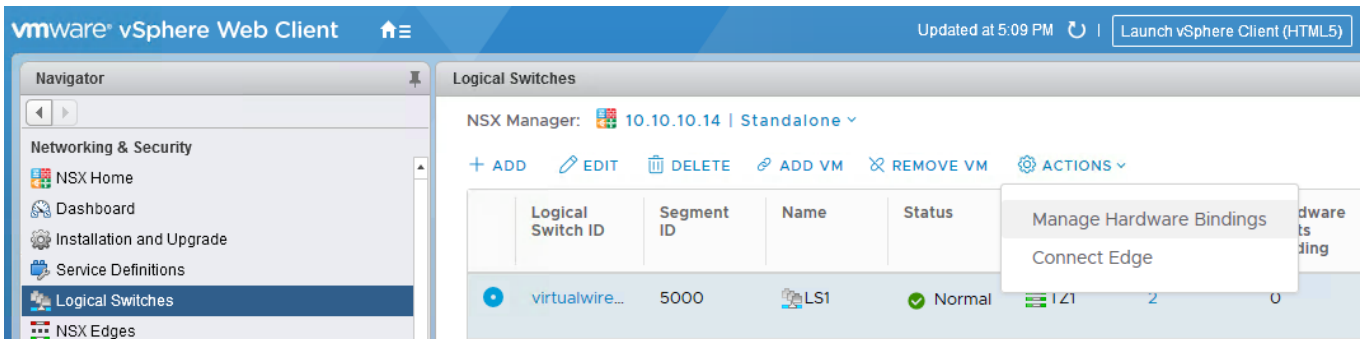
Add the 8325 and paste in the cert info.



Connectivity should be shown as “Up”

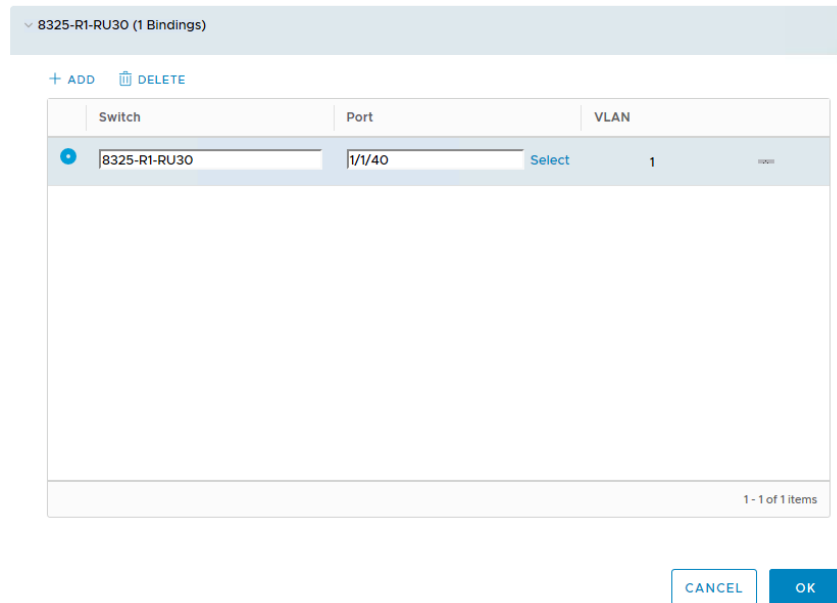


Navigate to “Networking and Security -> Logical Switches -> select the logical switch -> Actions -> Manage Hardware Bindings”

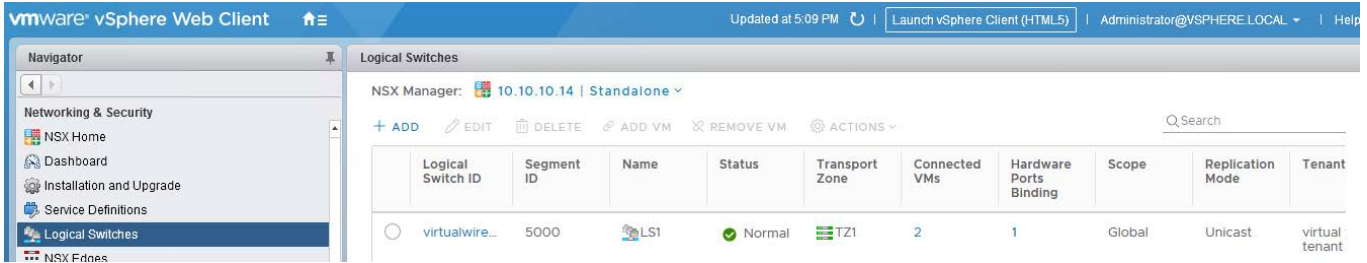


You should be able to select the port facing the bare metal server

Manage Hardware Bindings | LS1



The logical switch should now be connected to VMs and also have hardware port binding shown



Final validation

From the 8325, you can validate connectivity to the controller

```
8325-R1-RU30# sh hsc
Controller IP      Port      Connection Connection
address           status    state
-----
10.10.10.18       6640     ACTIVE    UP
```

Local and remote mac addresses are learnt when traffic is generated between VM/BM, remote VTEP IPs are also shown.

```
8325-R1-RU30# sh mac-address-table
MAC age-time      : 300 seconds
Number of MAC addresses : 4
```

MAC Address	VLAN	Type	Port
00:50:56:b4:c7:01	1	hsc	vxlan1 (99.99.11.121)
00:50:56:b4:b8:7b	1	hsc	vxlan1 (99.99.11.122)
54:80:28:fd:19:00	1	dynamic	1/1/40
54:80:28:fd:19:bd	1	dynamic	1/1/40

VM and BM are able to establish L2 network connectivity over the VXLAN tunnels

