



# VMware vSAN – Nested

➤ Nested Environment

NOTE: This is not a detailed instruction manual, just a little helper with some useful scripts

Stephen Tuomey  
Sr. Systems Engineer – Hyper-Converged Infrastructure  
[stuomey@vmware.com](mailto:stuomey@vmware.com)

vmware®

# vSphere Nested Environment

Configuration & Suggestions

# vSphere Nested Host(s)

- Steps & Order – Page #1
  - Configure ESXi Hypervisor
    - IP Address (think sequential)
    - DNS (Active Directory / Linux)
    - NTP Servers (0.us.pool.ntp.org, 1.us.pool.ntp.org, 2.us.pool.ntp.org, 3.us.pool.ntp.org)
  - Disks
    - Located on Physical Host's NVMe / SSD based datastores
    - Allocate 'thin'
    - Hard disk 1 ← Hypervisor Boot
      - 5GB
    - Hard disk 2 ← vSAN Cache
    - Hard disk 3 ← vSAN Capacity
    - Hard disk 4 ← vSAN Capacity
      - 10GB or larger
      - 20GB or larger
      - 20GB or larger
  - Network(s)
    - Network adapter 1 ← Hypervisor Management & Nested 'VM Network'
      - Physical Host's 'VM Network'
    - Network adapter 2+
      - Physical Host's Non-External Network(s)

With some pretty easy scripting, you can deploy these automatically after the ESXi Hypervisor install

You are NOT designing for PERFORMANCE, BUT you want to show multiple objects, perhaps failure scenarios, and re-protect scenarios, ...

More Networks, allows you learn/demo 'better' network solutions (multiple NICs in vSwitches, DVS, active/passive, ...)

## SUGGESTION:

You are NOT building a Nested LAB for PERFORMANCE anything!

You are building a Nested LAB to learn (self) or to Demo/Teach (others)

Build the LAB for FEATURES

# VMware vSAN: Nested Lab – Nested ESXi

## ➤ Nested ESXi Initial Build Out – Steps & Order – Page #1

## Create a new standard vswitch

```
esxcli network vswitch standard add --vswitch-name=vSwitch1
```

## Add network card ports (vmnic(s)) to the vswitch

## Verify the correct vmnic(s)

```
esxcli network vswitch standard uplink add -u vmnic1 -v vSwitch1
```

```
esxcli network vswitch standard uplink add -u vmnic2 -v vSwitch1
```

## Add portgroups to the newly created vswitch

```
esxcli network vswitch standard portgroup add --portgroup-name=vMotion --vswitch-name=vSwitch1
```

```
esxcli network vswitch standard portgroup add --portgroup-name=vSAN --vswitch-name=vSwitch1
```

## Change the portgroup active/passive policies

## Set IF you have multiple vmnic(s) and multiple Top of Rack Switches

```
esxcli network vswitch standard portgroup policy failover set --portgroup-name=vMotion --active-uplinks vmnic1 --standby-uplinks vmnic2
```

```
esxcli network vswitch standard portgroup policy failover set --portgroup-name=vSAN --active-uplinks vmnic2 --standby-uplinks vmnic1
```

## Add / Modify the next line(s) if you have a specific VLAN tag for the vSAN & vMotion Network(s)

## Set IF you have multiple VLANs

```
# esxcli network vswitch standard portgroup set -p vMotion -v XX
```

```
# esxcli network vswitch standard portgroup set -p vSAN -v XX
```

# VMware vSAN: Nested Lab – Nested ESXi

## ➤ Nested ESXi Initial Build Out – Steps & Order – Page #2

## Add vmkernel adapters to the created portgroups

```
esxcli network ip interface add --interface-name=vmk1 --portgroup-name=vMotion
```

```
esxcli network ip interface add --interface-name=vmk2 --portgroup-name=vSAN
```

## Assign IP addresses to the vmkernel adapters

## Change the ipv4 address to match your network

```
esxcli network ip interface ipv4 set --interface-name=vmk1 --ipv4=192.168.100.101 --netmask=255.255.255.0 --type=static
```

```
esxcli network ip interface ipv4 set --interface-name=vmk2 --ipv4=192.168.200.101 --netmask=255.255.255.0 --type=static
```

## Set vMotion “transport” to the created vmkernel port

```
vim-cmd hostsvc/vmotion/vnic_set vmk1
```

## Set vSAN Data “transport” to the created vmkernel port

```
esxcli vsan network ip add --interface-name=vmk2 --traffic-type=vsan
```

## Set vSAN Witness “transport” to the created vmkernel port

```
esxcli vsan network ip add --interface-name=vmk0 --traffic-type=witness
```

##verify that the “networks” can ping other members

```
vmkping 192.168.100.101 -c 4
```

```
vmkping 192.168.200.101 -c 4
```

# Nested Environment – Management Entities

## ➤ Steps & Order – Page #2

### ➤ Management vCenter

- IP Address (I suggest your home network @ .100 → 10.0.0.100)
- DNS (your DNS)
- NTP Servers (0.us.pool.ntp.org, 1.us.pool.ntp.org, 2.us.pool.ntp.org, 3.us.pool.ntp.org)

### ➤ Management DNS (Active Directory / Bind)

- IP Address (I suggest your home network @ .120 → 10.0.0.120)
- DNS (Itself with 'forwarders' to the internet {or corporate})
- OS: Nominally whatever you like (Windows 2012R2 / 2016 or Linux)
  - VMware PowerCLI
  - Putty
  - Chrome (or your favorite browser)
  - Active Directory or Bind
- This CAN be used as you 'Jump Box'

### ➤ Environment 'Jump Box'

- IP Address (I suggest your home network @ .125 → 10.0.0.125)
- DNS (your DNS)
- OS: Nominally whatever you like (Windows 10)
  - VMware PowerCLI
  - Putty
  - Chrome (or your favorite browser)

### ➤ vRealize Suite (Operations, Log Insight) & vSphere Replication

- IP Address (I suggest your home network @ .221 ... → 10.0.0.221)
- DNS (your DNS)

## ➤ Final vSphere Nested Environment – Example

- |                  |                      |
|------------------|----------------------|
| ➤ 10.0.0.100     | vCenter              |
| ➤ 10.0.0.101-1xx | vSphere              |
| ➤ 10.0.0.120     | Active Directory     |
| ➤ 10.0.0.121     | vRealize Operations  |
| ➤ 10.0.0.122     | vRealize Log Insight |
| ➤ 10.0.0.123     | vSphere Replication  |

# Thank You

## Start with vSAN Assessment



- Understand the needs of your environment in just one week!
- Contact your VMware Partner, SEs or Rep for a free vSAN assessment

### On-line resources



StorageHub – Demos and Guides  
[www.storagehub.vmware.com](http://www.storagehub.vmware.com)



Free Hands-On Labs  
[vmware.com/go/vsanlab](http://vmware.com/go/vsanlab)



Virtual Blocks – vSAN Blog  
[blogs.vmware.com/virtualblocks/](http://blogs.vmware.com/virtualblocks/)



vSAN Sales Experts  
[sdssales@vmware.com](mailto:sdssales@vmware.com)



VxRail Test Drive – No Charge  
[Full Agenda & Registration Portal](#)

### Additional on-line resources

[VMware Hands-On Labs Catalog](#)

[Cormac Hogan VMware vSAN Blog](#)

[VMware Storage and Availability Technical Documents](#)

### Contact

[stuomey@vmware.com](mailto:stuomey@vmware.com)