

vDS (vNetwork Distributed Switch), My Understanding Part 1

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vSphere has introduced many new features. One of new feature is vDS (vNetwork Distributed Switch) which always confuses me and lots of people. I'm trying to explain it as simple and easy, also deep to you as I can. If I make any mistakes, please feel free to leave comment. Thank you.

So What is vDS? What's difference between vSS and vDS from configure file structure?

vDS is a new Virtual Switch introduced by Vmware. The old vSS is more like local Host property. All switch data saved in the local Host. Other Host is not aware what kind of vSS other Host has. Not only vCenter can't do anything about it, it causes trouble when you do vMotion. vDS is saved in both vCenter and Host. One copy in the vCenter, vDS is saved in the SQL database. In the local host, vDS has another local database cache copy sits at /etc/vmware/dvsdata.db. This local cache will be updated by vCenter every 5 minutes.

You can use following command to help you to get copy to read the local host database.

```
cd /usr/lib/vmware/bin
```

```
./net-dvs > /tmp/dvs.txt
```

then, you can read dvs.txt

```
switch ca 49 07 50 f7 81 c1 fb-da e6 79 e2 aa f1 5f 85 (etherswitch)
global properties:
  com.vmware.common.alias = vDS-Production
  com.vmware.etherswitch.mtu = 1500
  com.vmware.etherswitch.cdp = CDP, advertise & listen
  com.vmware.common.uplinkPorts:
    dvUplink1
  com.vmware.etherswitch.pvlanMap:
    (100, 100) - promiscuous
    (100, 101) - community
    (100, 102) - isolated
  com.vmware.common.pgmap:
    dvportgroup-84 <-> vDS-Production-DVUplinks-83
    dvportgroup-143 <-> PVLAN100
    dvportgroup-144 <-> PVLAN101
    dvportgroup-145 <-> PVLAN102
    dvportgroup-146 <-> Production
  host properties:
    com.vmware.common.host.portset = DvsPortset-0
    com.vmware.host.volatile.status = green
    com.vmware.common.host.uplinkPorts:
      130
  port 130:
    com.vmware.common.port.alias = dvUplink1
    com.vmware.common.port.block = false
    com.vmware.etherswitch.port.teaming:
      load balancing = source virtual port id
      link selection = link state up; link speed=10Mbps;
      link behavior = notify switch; reverse filter; best effort on failure; shotgun on
  failure:
    active =
    standby =
    com.vmware.etherswitch.port.security = deny promiscuous; allow mac change; allow forged f
  cnames
    com.vmware.etherswitch.port.vlan = Guest VLAN tagging
```

Also, after you configure vDS on your local host, your esx.conf (/etc/vmware) has record shows brief configuration information of vDS.

```
[firewall/services/nfsClient = "0"
/firewall/services/nfsClient = "0"
/firewall/services/sshClient = "1"
/firewall/services/sshServer = "1"
/firewall/services/swiSCSIClient = "1"
/nas/NFS01/enabled = "true"
/nas/NFS01/host = "192.168.100.172"
/nas/NFS01/readOnly = "true"
/nas/NFS01/share = "/iso"
/nas/VDCRepository/enabled = "true"
/nas/VDCRepository/host = "vdc-nas-a.vmeduc.com"
/nas/VDCRepository/readOnly = "true"
/nas/VDCRepository/share = "vdcrepos"
/net/dvswitch/child[0000]/dvsClassName = "etherswitch"
/net/dvswitch/child[0000]/dvsName = "vDS-Production"
/net/dvswitch/child[0000]/name = "DvsPortset-0"
/net/dvswitch/child[0000]/numPorts = "256"
/net/dvswitch/child[0000]/uplinks/child[0000]/connectionId = "1268107261"
/net/dvswitch/child[0000]/uplinks/child[0000]/dvpId = "130"
/net/dvswitch/child[0000]/uplinks/child[0000]/pnic = "vmmic1"
/net/dvswitch/child[0001]/dvsClassName = "etherswitch"
/net/dvswitch/child[0001]/dvsName = "vDS-vMotion"
/net/dvswitch/child[0001]/name = "DvsPortset-1"
/net/dvswitch/child[0001]/numPorts = "256"
/net/dvswitch/child[0001]/uplinks/child[0000]/connectionId = "810138511"
/net/dvswitch/child[0001]/uplinks/child[0000]/dvpId = "130"
/net/dvswitch/child[0001]/uplinks/child[0000]/pnic = "vmmic2"
/net/dvswitch/child[0002]/dvsClassName = "etherswitch"
/net/dvswitch/child[0002]/dvsName = "vDS-1SCSI-NAS"
/net/dvswitch/child[0002]/name = "DvsPortset-2"
/net/dvswitch/child[0002]/numPorts = "256"
/net/dvswitch/child[0002]/uplinks/child[0000]/connectionId = "1132366343"
/net/dvswitch/child[0002]/uplinks/child[0000]/dvpId = "130"
/net/dvswitch/child[0002]/uplinks/child[0000]/pnic = "vmmic3"
/net/pnic/child[0000]/mac = "00:21:5a:ce:87:06"
```

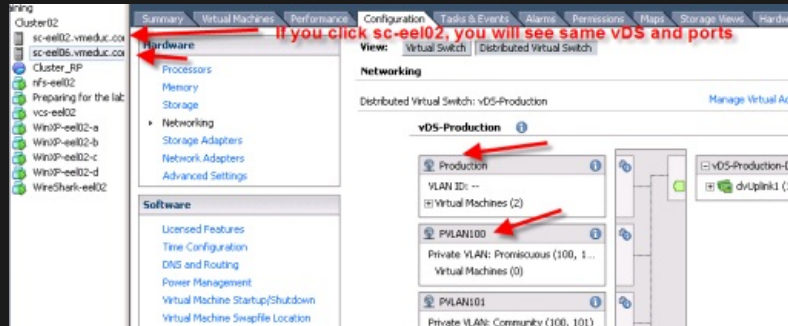
Those 3 configuration combines vDS structure. This also makes vDS can work even after Host disconnected from vCenter.

What's difference between vSS and vDS on control level?

With vSS, everything should be controlled on local host. Basically, you go to Local Host->Configuration->Networking. Then, you start everything from there. But vDS is different. vDS divide control into 2 different level. I call them high level and low level.

High Level: High level is to create/remove, management teaming, distribution port group etc. This level sits at vCenter->Inventory->Networking.

Low Level: This level is to connect your vm, vmkernel, and your local physical cards to vDS. Please be aware that your vm, vmkernel, etc are connecting to distribute port group. Unlike local vSS (you have create same vswitch, same vswitch port group on all hosts), vDS is pushed from vCenter to all Hosts. As long as you are connecting to same vDS, you will have same distribute port group.



With local physical nic card, they need to connect to dvUplink side. You can choose any number of local nics to connect or even no nic at all. But what you can't do is to setup teaming (only work for 2 nics from same host), traffic shaping, VLAN because you need to setup on high level.

To be continued.

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