Determine how VM traffic is getting pinned



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Introduction

This document provides information and examples about Virtual Machine (VM) pinning both on the VMWare vSwitch/Distributed Switch and on the Cisco Nexus 1000v. It is important to understand which uplink a VM is using for communication, both for troubleshooting and design aspects.

Both the VMWare vSwitch/Distributed Switch and the Nexus 1000v support link aggregation with hashing as well as pinning to a particular port. Starting with vSphere 5.1, the vDS supports LACP as well as other methods, such as "Route Based IP Hash". The Cisco Nexus 1000v supports LACP and "Mode On" port–channels.

Hard VM pinning to an uplink is known as "Route Based on Virtual Port ID" on the vSwitch and "mac-pinning" on the Cisco Nexus 1000v. This document guides you through determining which uplink the VM is using for communication.

Prerequisites

Requirements

Cisco recommends that you have knowledge of these topics:

- VMWare ESX(i)
- Cisco Nexus 1000v

Components Used

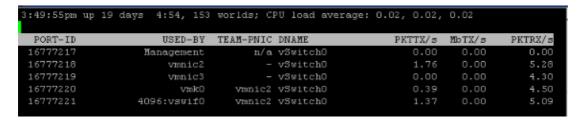
This document is not restricted to specific software and hardware versions.

Conventions

Refer to Cisco Technical Tips Conventions for more information on document conventions.

Commands

Use the vSwitch or vDS and run the **esxtop** command from the CLI of the VMWare ESX(i) host. Then, press \mathbf{n} to get to the networking section:



Based on this output you can see the Virtual Machine in the USED-BY column and the vmnic it is using in the TEAM-PNIC column. If a hashing algorithm was used you will see "All" in the TEAM-PNIC column.

If the Cisco Nexus 1000v is being used, the command is different. From the CLI of the ESX(i) host, run the **vemcmd show port** command. In a mac–pinning configuration, each vmnic is assigned a unique Sub–Group ID (SGID).

```
VSM Port
                Admin Link
                                                  Vem Fort
        Eth3/2
         Veth6
                               FIND
                                                 Nexus100DV.eth2
         Veth3
                               FED
         Veth2
                                               0 Nexus1000V.eth1
         Veth1
                                                  Nexus1000V.eth0
         Veth5
                   UΡ
                        UΡ
                               FUD
                                                  Uin 2K8 - 2 ethernetO
                                                  Win 2K8 etherneti
                 DOMN
                               BLK
                                               O Win 2K8 ethernet0
F/B: Port is BLOCKED on some of the vlans.
```

This output shows the SGID mapping for VM's to vmnic's. Matching up the SGID of the VM to the SGID of the vmnic will show you the vmnic the Virtual Machine is using for communication. If LACP or Manual Port channels are used, the SGIDs for everything will be unique.

By running the **vemcmd show port vlans** command, vmnics and VMs will display the VLANs they are forwarding on. This is also useful when troubleshooting. The Allowed VLANs list displays the VLAN that is forwarding for that specific Local Target Logic (LTL). In order to figure out which LTL maps to which VM name, see the above output of the **vemcmd show port** command.

```
vemcmd show port vlans
                         Native
                                  VLAN
                                          Allowed
LTL
      VSM Port
                 Mode
                          VLAN
                                  State
                                  FWD
        Eth3/2
         Veth6
                                  FWD
                                  FWD
         Veth3
         Veth2
         Veth1
                                  FWD
         Veth5
                                  BLK
         Veth4
                                  FWD
```

The following can be run from the VSM as well if the host CLI access is unavailable:

Nexus1000v# module vem 3 execute vemcmd show port								
LTL	VSM Port	Admin	Link	State	PC-LTL	SGID	Vem Port	Type
17	Eth3/1	UP	UP	F/B*	305	0	vmnic0	
18	Eth3/2	UP	UP	F/B*	305	1	vmnic1	
49	Veth1	UP	UP	FWD	0	0	vmk0	
50	Veth9	UP	UP	FWD	0	1	vmk1	
51	Veth12	UP	UP	FWD	0	0	vmk2	VXLAN
52	Veth5	UP	UP	FWD	0	1	Nexus1000v	.eth2
53	Veth4	UP	UP	FWD	0	1	Nexus1000v	.eth1
54	Veth3	UP	UP	FWD	0	1	Nexus1000v	.eth0

Alternatively, check the MAC address tables on the upstream switches for the VM's MAC address. This can also inform you of the port the switch is learning the MAC address on.

Related Information

• Technical Support & Documentation – Cisco Systems

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