

Determine how VM traffic is getting pinned

TAC

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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 **n** to get to the networking section:

```
3:49:55pm up 19 days 4:54, 153 worlds; CPU load average: 0.02, 0.02, 0.02
```

PORT-ID	USED-BY	TEAM-PNIC	DNAME	PKTTE/s	MbTE/s	PKTRX/s
16777217	Management	n/a	vSwitch0	0.00	0.00	0.00
16777218	vmnic2	-	vSwitch0	1.76	0.00	5.28
16777219	vmnic3	-	vSwitch0	0.00	0.00	4.30
16777220	vmk0	vmnic2	vSwitch0	0.39	0.00	4.50
16777221	4096:vsfif0	vmnic2	vSwitch0	1.37	0.00	5.09

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).

```
- # 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	Veth6	UP	UP	FWD	0	0	vmk0	
50	Veth3	UP	UP	FWD	0	1	Nexus1000V.eth2	
51	Veth2	UP	UP	FWD	0	0	Nexus1000V.eth1	
52	Veth1	UP	UP	FWD	0	1	Nexus1000V.eth0	
53	Veth5	UP	UP	FWD	0	0	Win 2K8 - 2 ethernet0	
54		DOWN	UP	BLK	0		Win 2K8 ethernet1	
55	Veth4	UP	UP	FWD	0	0	Win 2K8 ethernet0	
305	Pol	UP	UP	F/B*	0			

* F/B: Port is BLOCKED on some of the vlans.
Please run "vemcmd show port vlans" to see the details.

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
```

LTL	VSM Port	Mode	Native VLAN	VLAN State	Allowed Vlans
17	Eth3/1	T	1	FWD	168
18	Eth3/2	T	1	FWD	168
49	Veth6	A	168	FWD	168
50	Veth3	A	168	FWD	168
51	Veth2	A	168	FWD	168
52	Veth1	A	168	FWD	168
53	Veth5	A	168	FWD	168
54		A	1	BLK	1
55	Veth4	A	168	FWD	168
305	Pol	T	1	FWD	168

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

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