Per-VLAN (SVI) counter feature on Nexus 3000 platform

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Introduction

This article documents per-VLAN counter feature on Nexus 3000 platform

Problem

Per-VLAN counter is not shown on "show interface vlan <vlan ID>" on unified image Release 7.x

Nexus_3064# show interface vlan 1 counter

Port	InOctets	InUcastPkts
Vlan1	--	0

Port	InMcastPkts	InBcastPkts
Vlan1	--	--

Port	OutOctets	OutUcastPkts
Vlan1	--	--

Port	OutMcastPkts	OutBcastPkts

Vlan1   --   --

Solution

1. On Release 7.x, per-VLAN counter is NOT supported on Nexus 3000. This is because SVI
TCAM carving support is NOT available on Nexus 3000 platform and on Release 7.x, SVI TCAM
carving support is necessary for per-VLAN counter to function correctly.

Note

> Starting with Release 7.0(3)I2(1) and later releases, there is a single image for booting the Cisco Ne
> 3000 Series platforms. The kickstart and system images are not required anymore.
> The single image binary now boots up on both Cisco Nexus 3000 and 3100 Series platforms and Ci
> Nexus 9000 Series platforms.
> And On Nexus 9000 platform, per-VLAN counter feature is acheived by carving a new TCAM region
> SVI, such behaviour is inherited on Nexus 3000 platform,
> Therefore, from Release 7.0(3)I2(1), SVI TCAM carving support is necessary for per-VLAN counter
> function correctly.

Please see below for the TCAM carving options of Nexus 3000 Series Platform, we can see that
option "SVI" is NOT available:

Nexus_3064(config)# hardware profile tcam region ?

    arpacl   Configure tcam for arpacl region

    e-qos   Configure tcam for e-qos region

    e-racl   Configure tcam for e-racl region

    e-vacl   Configure tcam for e-vacl region

    ifacl   Configure tcam for ifacl region

    ipsg   Configure tcam for ipsg region

    ipv6-e-racl Configure tcam for ipv6-e-racl region

    ipv6-pbr   Configure tcam for ipv6-pbr region

    ipv6-qos   Configure tcam for ipv6-qos region

    ipv6-racl   Configure tcam for ipv6-racl region

    ipv6-sup   Configure tcam for ipv6-sup region

    nat   Configure tcam for NAT region

    pbr   Configure tcam for pbr region

    qos   Configure tcam for qos region

    qoslbl   Configure tcam for qoslbl region

racl   Configure tcam for racl region

sup   Configure tcam for sup-tcam region

vacl   Configure tcam for vacl region

2. Per-VLAN counter feature is supported on Release 5.x, and it is also supported from day one in Release 6.x

On Release 5.x, it has a section clearly stating SVI and VLAN counters are supported:

https://www.cisco.com/c/en/us/td/docs/switches/datacenter/nexus3000/sw/release/503_u3_1/n3k_rel_notes_503_u3_1.html#wp414722

3. Although per-VLAN counter is supported on both Release 5.x and Release 6.x, the support is limited. Please see below for the limitations:

- Not all multicast packets will be counted, known control plane multicast packets (e.g. OSPF, EIGRP Hello Message etc) are NOT counted as they are punted to the CPU using CoPP queues.
- The counter value shown under "In UnicastPackets" counts all packets (including Unicast, Multicast and Broadcast) ingressing on that particular Layer port.
- At the time when this article is written, there is no fix or workaround available for Nexus 3000 Series Platform, however,per-VLAN counter featurewill be supported without theabove-mentionedlimitations on Nexus 3100 Series Platform if TCAM is carved for SVI.

Note

Nexus 3000 Series Platform has Broadcom Trident + ASIC
Nexus 3100 Series Platform has Broadcom Trident 2 AISC
The limitation on counting Multicast packets is due to a limitation on ASIC (Broadcom), therefore, it i a software defect.