

连结9000：数据包解释的跟踪程序工具

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简介

数据包追踪器是在能使用跟踪数据包路径到交换机的连结9000的一个内藏的工具。它被调用使用line命令，并且可以配置匹配IP地址和或第4层属性。它不可能用于匹配ARP流量。

此工具将提供确认流是否通过交换机横断。它也提供a与跟踪可以是有用的为断断续续/完整包丢失案例的流统计信息相反。

先决条件

要求

Cisco 建议您具有以下主题的基础知识：

- 思科连结9000硬件体系结构

使用的组件

本文档中的信息基于以下软件和硬件版本：

- 思科连结9500
- SW版本7.0(3)I2(2a)

用例案例

- 可适用为IPv4只流(不支持的IPv6和非IP)

- 此工具不显示数据包内在详细信息如显示由wireshark。
- 断断续续包丢失：ping或其他工具能提供丢失的数据包—确定症状
- 完整包丢失

支持的硬件

与Broadcom三叉戟II ASIC支持仅线卡/结构模块或者突岩。列表如下：

- N9K-C9372TX
- N9K-C9372PX
- N9K-C9332PQ
- N9K-C9396TX
- N9K-C9396PX
- N9K-C93128TX
- N9K-C9336PQ
- N9K-X9564PX
- N9K-X9564TX
- N9K-X9636PQ

不支持的硬件

- N9K-C93180YC-EX
- N9K-X9732C-EX
- N9K-C9232C
- N9k-C9272Q
- N9k-C92160YC

注意：如果特定linecard/TOR不是列出的，请提供援助对TAC

如何使用数据包跟踪程序

配置

数据包追踪器命令是EXEC级别命令。

```
N9K-9508#test packet-tracer src_ip <src_ip> dst_ip <dst_ip> <==== provide your src and dst ip
N9K-9508#test packet-tracer start <==== Start packet tracer
N9K-9508#test packet-tracer stop <==== Start packet tracer
N9K-9508#test packet-tracer show <==== Check for packet matches
```

在线卡或结构模块存在的上述命令编程在每Broadcom三叉戟II ASIC的触发。当与匹配的一个流归因于时穿过这些模块，它将显示是的计数器点击的从而帮助识别在交换机(入口模块内的路径---结构模块的>One---->egress模块)。

计数器可以使用到corelate丢包。

背景信息

结构模块interconenct输入输出模块slot。所有结构moduels是活跃的并且运载流量。每个结构模块两个Broadcom三叉戟II ASIC (T2)实例。

问题

PACL (访问列表波尔特)用于发现一个特定的物理接口是否接收我们的感兴趣流量。然而在连结平台，某些线路卡没有为PACL雕刻的TCAM。TCAM雕刻要求模块重新加载。在那些情况下，使用匹配感兴趣流量的数据包跟踪程序。您能也跟踪上升至结构端口和去往出口模块的数据包。数据包跟踪程序所以给予您更多洞察力到流量如何在交换机内转发。

数据包跟踪程序使用被雕刻的TCAM条目SPAN。

解决方案

NS -北辰ASIC

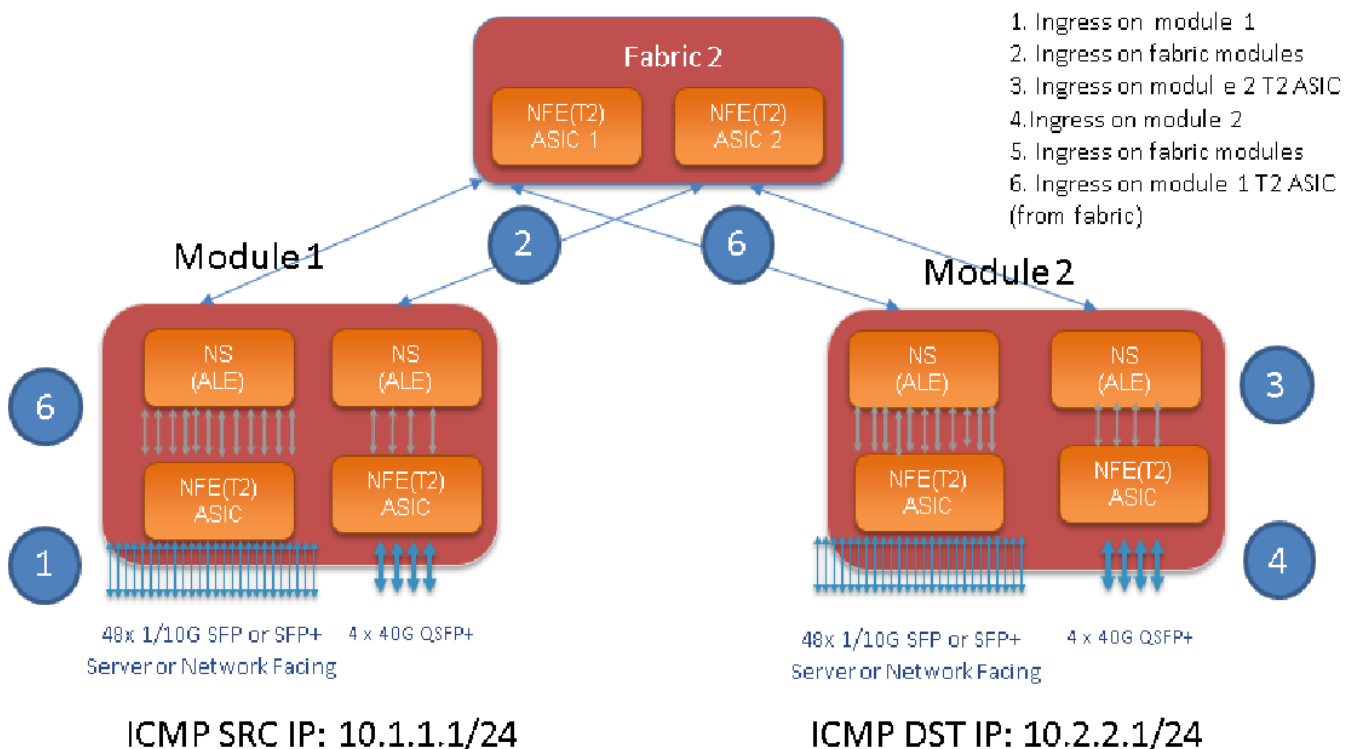
T2 -三叉戟II ASIC

NFE -网络转发引擎

淡啤酒- ACI分支引擎

关于连结9000交换机结构的更多信息，参考：

<http://www.cisco.com/c/en/us/products/collateral/switches/nexus-9000-series-switches/white-paper-c11-729987.html>



注意：

有在一个9500个机箱的六个结构模块。显示仅一个结构上面图片简化。从模块的流量能点击所有结构模块

用例：匹配在入口模块的流量，流量ingressing在结构模块的和在出口模块的流量ingressing的T2 ASIC

这是需要配置匹配我们的感兴趣流量的基本步骤：

```
switch#test数据包追踪器{<src-ip>|<dst-ip>|<src-l4-port>|<dst-l4-port>} [<protocol>] [详细信息FP|详细信息hg]
```

这是您需要的设置：

```
switch#test packet-tracer src_ip <src_ip> dst_ip <dst_ip> protocol <> <==== provide your src and dst ip and protocol (protocol option 1 is for icmp)
switch#test packet-tracer start <==== Start packet tracer
switch#test packet-tracer show <==== Check for packet match statistics
```

您不需要应用它到任何paritcular接口。在设置上安装在所有LC's/FM间的过滤器ACL在T2 ASIC所有实例。

它将显示在流量ingressed的模块的数据包计数。这匹配我们的ingressing在模块的感兴趣流量，线路卡和结构。

这是配置示例：

```
N9K-9508# test packet-tracer src-ip 10.1.1.1 dst-ip 10.2.2.1 protocol 1 <==== Protocol 1 matches ICMP traffic
N9K-9508# test packet-tracer start
```

这是如何解释“测验数据包追踪器显示”输出：

```
N9K-9508# test packet-tracer show
Packet-tracer stats
-----
Module 1: <==== Slot #. Same output will be displayed for other Linecards's and Fabric modules.
Filter 1 installed: src-ip 10.1.1.1 dst-ip 10.2.2.1 <==== Our filter #1
ASIC instance 0: <==== Trident ASIC instance #0
Entry 0: id = 7425, count = 0, active, fp, <==== pakcet match count on front panel port. it could be any port
Entry 1: id = 7426, count = 0, active, hg, <==== packet match count from fabric module to T2 ASIC on the linecard
ASIC instance 1:
Entry 0: id = 7425, count = 0, active, fp,
Entry 1: id = 7426, count = 0, active, hg,
Filter 2 uninstalled:
Filter 3 uninstalled:
Filter 4 uninstalled:
Filter 5 uninstalled:
```

配置示例：

配置数据包跟踪程序：

```
N9K-9508# test packet-tracer src-ip 10.1.1.1 dst-ip 10.2.2.1 protocol 1 <==== Filter to match echo traffic. Protocol 1 to match icmp traffic
N9K-9508# test packet-tracer src-ip 10.2.2.1 dst-ip 10.1.1.1 protocol 1 <==== Filter to match echo reply traffic
N9K-9508# test packet-tracer start <==== Start packet tracer
N9K-9508# test packet-tracer show non-zero <==== Command to see packet statistics
Packet-tracer stats
-----
Module 1:
Filter 1 installed: src-ip 10.1.1.1 dst-ip 10.2.2.1
Filter 2 installed: src-ip 10.2.2.1 dst-ip 10.1.1.1
Filter 3 uninstalled:
Filter 4 uninstalled:
Filter 5 uninstalled:
Module 2:
```

```

Filter 1 installed: src-ip 10.1.1.1 dst-ip 10.2.2.1
Filter 2 installed: src-ip 10.2.2.1 dst-ip 10.1.1.1
Filter 3 uninstalled:
Filter 4 uninstalled:
Filter 5 uninstalled:
Module 22:
Filter 1 installed: src-ip 10.1.1.1 dst-ip 10.2.2.1
Filter 2 installed: src-ip 10.2.2.1 dst-ip 10.1.1.1
Filter 3 uninstalled:
Filter 4 uninstalled:
Filter 5 uninstalled:
Module 23:
Filter 1 installed: src-ip 10.1.1.1 dst-ip 10.2.2.1
Filter 2 installed: src-ip 10.2.2.1 dst-ip 10.1.1.1
Filter 3 uninstalled:
Filter 4 uninstalled:
Filter 5 uninstalled:
Module 24:
Filter 1 installed: src-ip 10.1.1.1 dst-ip 10.2.2.1
Filter 2 installed: src-ip 10.2.2.1 dst-ip 10.1.1.1
Filter 3 uninstalled:
Filter 4 uninstalled:
Filter 5 uninstalled:
Module 25:
Filter 1 installed: src-ip 10.1.1.1 dst-ip 10.2.2.1
Filter 2 installed: src-ip 10.2.2.1 dst-ip 10.1.1.1
Filter 3 uninstalled:
Filter 4 uninstalled:
Filter 5 uninstalled:

```

测验：从SRC IP运行ping连接模块1对DST IP连接模块2：

```

Router# ping 10.1.1.1 source 10.2.2.1
PING 10.1.1.1 (10.1.1.1) from 10.2.2.1: 56 data bytes
64 bytes from 10.1.1.1: icmp_seq=0 ttl=253 time=0.77 ms
64 bytes from 10.1.1.1: icmp_seq=1 ttl=253 time=0.43 ms
64 bytes from 10.1.1.1: icmp_seq=2 ttl=253 time=0.408 ms
64 bytes from 10.1.1.1: icmp_seq=3 ttl=253 time=0.398 ms
64 bytes from 10.1.1.1: icmp_seq=4 ttl=253 time=0.383 ms
--- 10.1.1.1 ping statistics ---
5 packets transmitted, 5 packets received, 0.00% packet loss
round-trip min/avg/max = 0.383/0.477/0.77 ms

```

验证：检查数据包跟踪程序计数：

```

N9K-9508# test packet-tracer show non-zero <==== Command to see packet statistics

Packet-tracer stats
-----

Module 1:
Filter 1 installed: src-ip 10.1.1.1 dst-ip 10.2.2.1 protocol 1
ASIC instance 0:
Entry 0: id = 7425, count = 5, active, fp, <==== 5 Echo packets ingress on Module 1
Filter 2 installed: src-ip 10.2.2.1 dst-ip 10.1.1.1 protocol 1
Filter 3 uninstalled:
Filter 4 uninstalled:
Filter 5 uninstalled:

Module 2:
Filter 1 installed: src-ip 10.1.1.1 dst-ip 10.2.2.1 protocol 1
Filter 2 installed: src-ip 10.2.2.1 dst-ip 10.1.1.1 protocol 1
ASIC instance 0:
Entry 0: id = 7457, count = 5, active, fp, <==== 5 Echo reply packets ingress on Module 2

```

Filter 3 uninstalled:
Filter 4 uninstalled:
Filter 5 uninstalled:

Module 3:

Filter 1 installed: src-ip 10.1.1.1 dst-ip 10.2.2.1 protocol 1
Filter 2 installed: src-ip 10.2.2.1 dst-ip 10.1.1.1 protocol 1
Filter 3 uninstalled:
Filter 4 uninstalled:
Filter 5 uninstalled:

Module 4:

Filter 1 installed: src-ip 10.1.1.1 dst-ip 10.2.2.1 protocol 1
Filter 2 installed: src-ip 10.2.2.1 dst-ip 10.1.1.1 protocol 1
Filter 3 uninstalled:
Filter 4 uninstalled:
Filter 5 uninstalled:

Module 22:

Filter 1 installed: src-ip 10.1.1.1 dst-ip 10.2.2.1 protocol 1
ASIC instance 0:
Entry 0: id = 7425, count = 4, active, hg, <==== Fabric module 22 received 4 echo packets
Filter 2 installed: src-ip 10.2.2.1 dst-ip 10.1.1.1 protocol 1
Filter 3 uninstalled:
Filter 4 uninstalled:
Filter 5 uninstalled:

Module 23:

Filter 1 installed: src-ip 10.1.1.1 dst-ip 10.2.2.1 protocol 1
ASIC instance 0:
Entry 0: id = 7425, count = 1, active, hg, <==== Fabric module 23 received 1 echo packets
Filter 2 installed: src-ip 10.2.2.1 dst-ip 10.1.1.1 protocol 1
ASIC instance 0:
Entry 0: id = 7425, count = 3, active, hg, <==== Fabric module 23 received 3 echo reply packets
Filter 3 uninstalled:
Filter 4 uninstalled:
Filter 5 uninstalled:

Module 24:

Filter 1 installed: src-ip 10.1.1.1 dst-ip 10.2.2.1 protocol 1
Filter 2 installed: src-ip 10.2.2.1 dst-ip 10.1.1.1 protocol 1
ASIC instance 0:
Entry 0: id = 7425, count = 2, active, hg, <==== Fabric module 23 received 2 echo reply packets
Filter 3 uninstalled:
Filter 4 uninstalled:
Filter 5 uninstalled:

Module 26:

Filter 1 installed: src-ip 10.1.1.1 dst-ip 10.2.2.1 protocol 1
Filter 2 installed: src-ip 10.2.2.1 dst-ip 10.1.1.1 protocol 1
Filter 3 uninstalled:
Filter 4 uninstalled:
Filter 5 uninstalled:

N9K-9508#

其他有用的命令：

测验数据包追踪器删除所有<====去除所有已配置的过滤器

测验数据包追踪器结算<filter #>所有过滤器或指定的过滤器的<==== Clear counters

测试数据包追踪器src_ip <.> dst_ip <> l4-dst-port <dst_port>|l4-src-port <src_port>|协议根据L4 src_port、L4 dst_port或者协议的<====匹配。