

连结9000 : 信息包解释的跟踪程序工具

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Introduction

信息包跟踪程序是在能使用通过交换机跟踪信息包路径的连结9000的一个内藏的工具。它被调用使用line命令，并且可以被配置匹配IP地址和或分层堆积4个属性。它不可能用于匹配ARP数据流。

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/完全信息包丢失案例的流统计数据相反。

Prerequisites

Requirements

Cisco建议您有这些题目基础知识：

- Cisco连结9000硬件体系结构

Components Used

本文档中的信息基于以下软件和硬件版本：

- Cisco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)

- 此工具不显示信息包内在详细资料如显示由wireshark。
- 断断续续的信息包丢失：连接或其他工具能提供丢失的信息包的一种确定症状
- 完成信息包丢失

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

如何使用信息包跟踪程序

配置

信息包跟踪程序命令是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的触发器。当与匹配的流归因于时穿过这些模块，它显示是的计数器被击中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correlate丢包。

背景信息

结构模块interconenct输入输出模块slot。所有结构moduels是活跃的并且运载数据流。每个结构模

块两个Broadcom三叉戟II ASIC (T2)实例。

问题

PACL (端口访问列表)用于发现一个特定的物理接口是否收到了我们的感兴趣数据流。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，使用匹配感兴趣数据流的信息包跟踪程序。您能也跟踪上升至结构端口和去往出口模块的信息包。信息包跟踪程序所以给予您更多洞察力到数据流如何在交换机内转发。

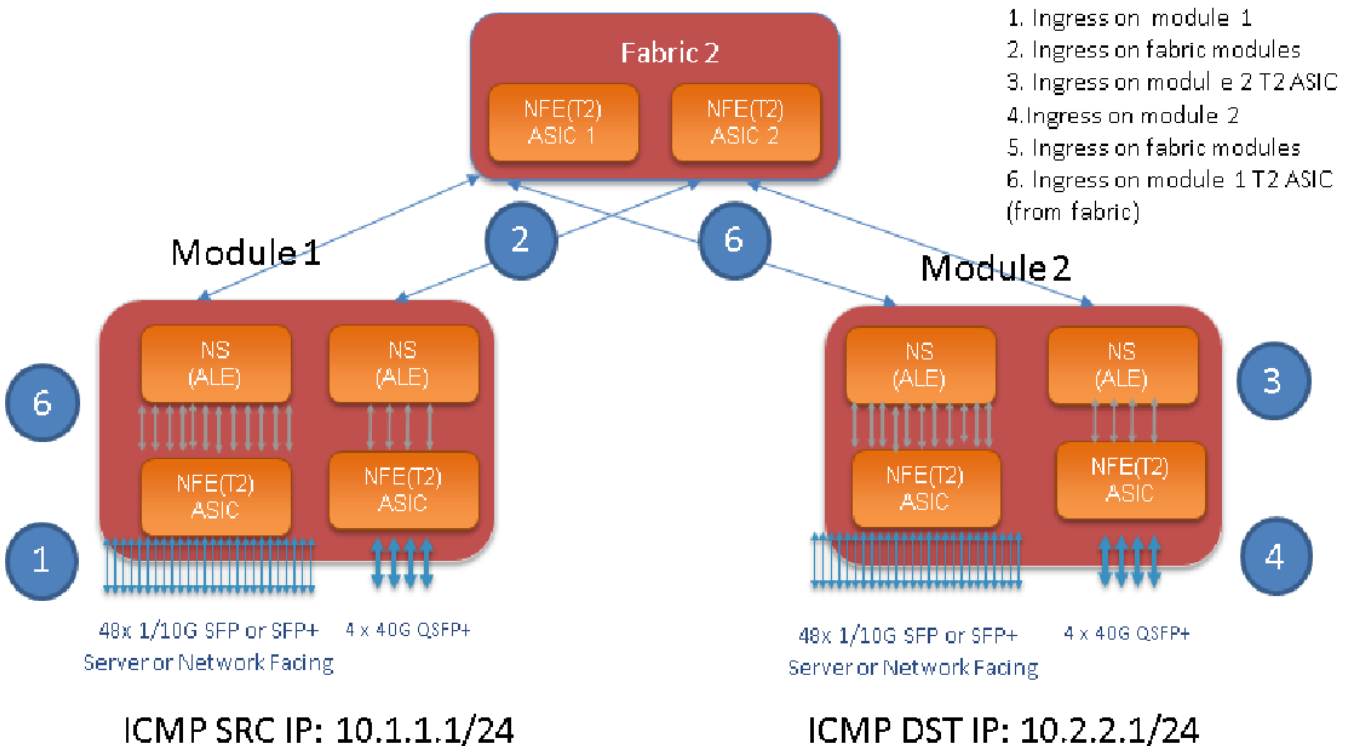
信息包跟踪程序使用被雕刻的TCAM条目SPAN。

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，请参见以下：

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



Note:

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。从模块的数据流能击中所有结构模块

用例：匹配在入口模块的数据流，数据流ingressing在结构模块的和在出口模块的数据流

ingressing的T2 ASIC

这是需要配置匹配我们的感兴趣数据流的基本步骤：

```
switch#test信息包跟踪程序{<src-ip>|<dst-ip>|<src-l4-port>|<dst-l4-port>} [<protocol>] [详细资料FP|详细资料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
```

您不需要适用它于任何particular接口。在设置上在T2安装在所有LC's/FM间的过滤器ACL ASIC所有实例上。

它将显示在数据流ingressed的模块的信息包计数。这匹配我们的ingressing在模块的感兴趣数据流，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“测试信息包跟踪程序显示”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:
```

示例配置：

配置信息包跟踪程序：

```
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:

```

测试：从SRC IP运行ping被连接模块1到DST IP被连接模块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：检查信息包跟踪程序计数：

```
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:

其他有用的命令：

测试信息包跟踪程序去除所有<===去除所有被配置的过滤器

为所有过滤器或指定的过滤器测试信息包跟踪程序清楚的<filter #> <=== Clear counters

测试信息包跟踪程序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。