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## 简介

Ping信息包测验是排除故障连通性问题的常用的测验。 本文将说明一系统化的方法为使用ping测试检查网络收敛系统6000 (NCS6K)缓慢的转发数据包。

## 先决条件

### 要求

本文档的读者应掌握以下这些主题的相关知识：

- 基本IP路由。
- XR操作系统。

### 使用的组件

本文为NCS6K平台创建。

本文档中的信息都是基于特定实验室环境中的设备编写的。本文档中使用的所有设备最初均采用原始（默认）配置。如果您使用的是真实网络，请确保您已经了解所有命令的潜在影响。

## 背景信息

有NCS6K和传统IOS-XR平台之间的一关键区别：NCS6K使用虚拟化技术加强系统。每节点、路由处理器(RP)或线卡(LC)，可能运行几台Virtual机器(VM)类似系统管理员VM、IOS-XR VM1，IOS-XR VM2等，结合在一起创建一个功能完备的XR节点。跟随的图显示示例RP和LC运行一个IOS-XR VM的地方：

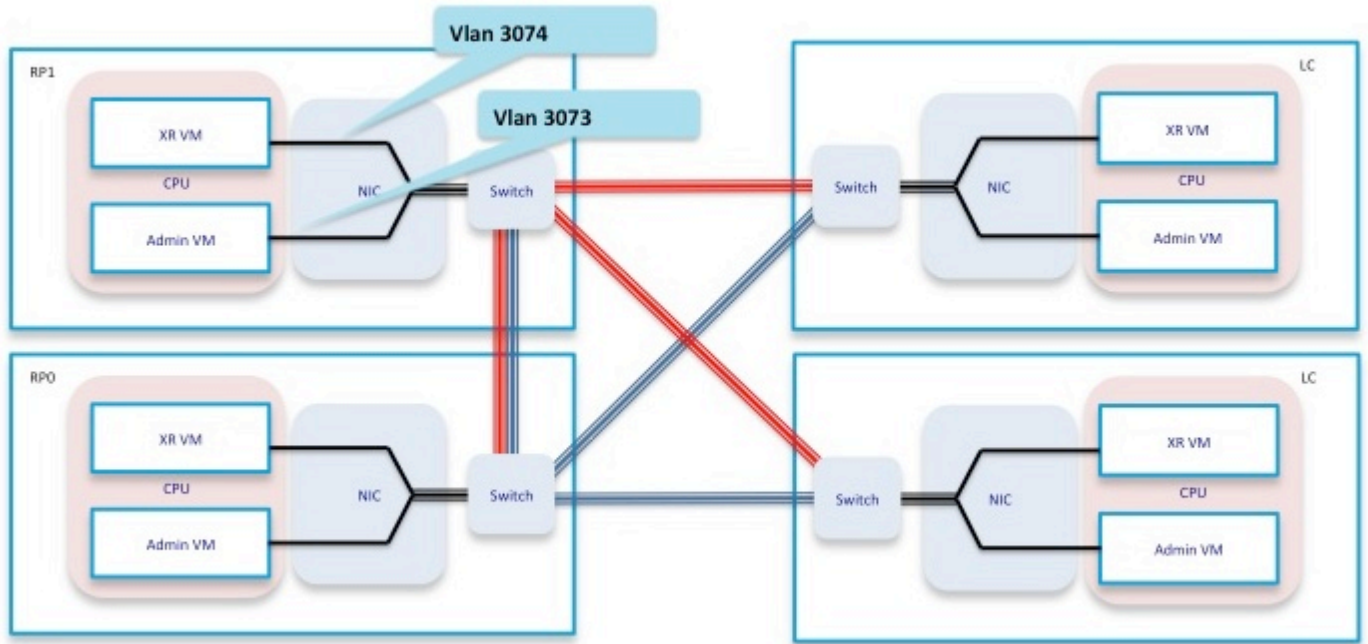
图 1



有连接RP和LCs的控制以太网。RP和LCs之间的控制层面流量将穿过此控制以太网。因为这是 virtualization 环境，问题，如这些数据包如何传送对特定VM，并且Nicantic (NIC)在RP或LC如何知道数据包被注定对他们？

简言之，VLAN用于区分不同的VMs流量，并且此进程由NIC完成。图2显示NIC如何将提供VLAN 3074流量对IOS-XR VM和对Admin VM的VLAN 3073流量。

图 2

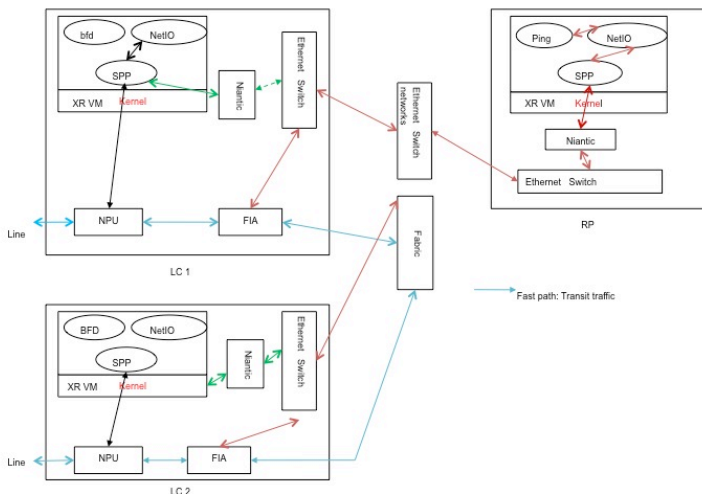


如图3.所显示，放置这些转发组件一起，您获得ping测试方案的简化的转发路径。

当进行从RP时的ping测试，数据包采取以下转发路径在方框里面：

RP\_PING < ? > RP\_NETIO < ? > RP\_SPP < ? > RP\_Linux\_Kernel\_Socket < ? > 交换机 < ? > LC\_FIA < ? > LC\_NPU (包括PSE, PLIM\_ASIC) < ? > 线路

图 3



## 验证

对于本文的其余，ping从RP将启动的方案将被采取为例。ping将直接地启动到在Te0/0/0/2/0的一台连接的主机。以下步骤将显示一逐步方法验证此ping信息包路径。

```
RP/0/RP0/CPU0:NCS6k-Deploy#show ip interface brief
Interface                               IP-Address
Status                                  Protocol Bundle-Ether671          10.67.2.2      Up
UpBundle-Ether672                      10.67.3.2      Down           DownLoopback0
10.17.17.17 Up                               UpMgmtEth0/RP0/CPU0/0          10.7.54.11     Up
UpTenGigE0/0/0/2/0                    10.67.1.2      Up             UpTenGigE0/0/0/2/1
unassigned Up                               UpTenGigE0/0/0/2/2          unassigned     Up
UpTenGigE0/0/0/2/3                    unassigned     Up             UpTenGigE0/0/0/2/4
unassigned Up                               UpTenGigE0/0/0/2/5          unassigned     Down
Down[snip]RP/0/RP0/CPU0:NCS6k-Deploy#show run interface Ten 0/0/0/2/0
interface TenGigE0/0/0/2/0
ipv4 address 10.67.1.2 255.255.255.252 load-interval 30
RP/0/RP0/CPU0:NCS6k-Deploy#ping
10.67.1.1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.67.1.1, timeout is 2
seconds:!!!!!!Success rate is 100 percent (5/5), round-trip min/avg/max = 5/6/7 ms
```

1. “请显示IPv4在RP节点的流量”计数器，将显示多少互联网控制消息协议(ICMP)响应被派出了，并且多少ICMP回复返回。

```
RP/0/RP0/CPU0:NCS6k-Deploy#show ipv4 traffic
IP statistics:
Rcvd: 1495334 total, 80112 local destination          0 format errors, 0 bad hop count
23 unknown protocol, 0 not a gateway                0 security failures, 0 bad source, 0 bad
header        133207 with options, 0 bad, 0 unknown  Opts: 0 end, 0 nop, 0 basic
security, 0 extended security                      0 strict source rt, 0 loose source rt, 0 record rt
0 stream ID, 0 timestamp, 133207 alert, 0 cipso     Frags: 0 reassembled, 0 timeouts, 0
couldn't reassemble, 0 fragments received          0 fragmented, 0 fragment count, 0
fragment max drop  Bcast: 0 sent, 0 received  Mcast: 1361652 sent, 1376283 received  Drop:
0 encapsulation failed, 237 no route, 0 too big    Sent: 1437435 total
ICMP statistics:
Sent: 0 admin unreachable, 63 network unreachable  8 host unreachable, 0 protocol
unreachable   16 port unreachable, 0 fragment unreachable  0 time to live
exceeded, 0 reassembly ttl exceeded              24 echo request, 30024 echo reply          0
mask request, 0 mask reply                        0 parameter error, 0 redirects            30131 total  Rcvd:
0 admin unreachable, 21 network unreachable       0 host unreachable, 0 protocol
unreachable   0 port unreachable, 0 fragment unreachable  0 time to live
exceeded, 0 reassembly ttl exceeded              30024 echo request, 15 echo reply          0 mask
request, 0 mask reply                            0 redirect, 0 parameter error            0 source quench, 0
timestamp, 0 timestamp reply                    0 router advertisement, 0 router solicitation
30063 total, 0 checksum errors, 0 unknown
```

2. 检查网络输入-输出(NETIO)组件。下一步是检查RP FINT NETIO一系列计数器。您必须发现IPv4节点“OUT”计数器在netio一系列的。如果它增加，含义数据包到达了NETIO组件和从NETIO组件被派出。Check initial NETIO counter value.

```
RP/0/RP0/CPU0:NCS6k-Deploy#sh netio chains FINT loc 0/rp0/cpu0 | in Stats<Protocol number>
(name) Stats<6> (fint_n2n) Stats IN: 0 pkts, 0 bytes; OUT: 0 pkts, 0 bytes<10> (clns)
Stats IN: 0 pkts, 0 bytes; OUT: 0 pkts, 0 bytes<12> (ipv4) Stats IN: 2788 pkts, 115373
bytes; OUT: 2816 pkts, 117933 bytes<13> (mpls) Stats IN: 16482 pkts, 2467508 bytes; OUT:
0 pkts, 0 bytes<18> (lpts) Stats IN: 47234 pkts, 10381065 bytes; OUT: 0 pkts, 0 bytes<19>
(ipv6) Stats IN: 0 pkts, 0 bytes; OUT: 0 pkts, 0 bytes<30> (ipv4_preroute) Stats IN: 0
pkts, 0 bytes; OUT: 0 pkts, 0 bytes<32> (ipv6_preroute) Stats IN: 0 pkts, 0 bytes; OUT: 0
pkts, 0 bytes<34> (fint_proto_tp) Stats IN: 0 pkts, 0 bytes; OUT: 0 pkts, 0 bytes<36>
(l2transport) Stats IN: 0 pkts, 0 bytes; OUT: 0 pkts, 0 bytes
```

Initiate 10 ping packets.

```
RP/0/RP0/CPU0:NCS6k-Deploy#ping 10.67.1.1 coun 10
Type escape sequence to abort.
Sending 10, 100-byte ICMP Echos to 10.67.1.1, timeout is 2 seconds:!!!!!!!!!!!!Success rate is 100
percent (10/10), round-trip min/avg/max = 4/7/8 ms
```

Check NETIO counter again. You would see increment of 10 packets.

```
RP/0/RP0/CPU0:NCS6k-Deploy#sh netio chains FINT loc 0/rp0/cpu0 | in Stats<Protocol number>
(name) Stats<6> (fint_n2n) Stats IN: 0 pkts, 0 bytes; OUT: 0 pkts, 0 bytes<10> (clns)
Stats IN: 0 pkts, 0 bytes; OUT: 0 pkts, 0 bytes<12> (ipv4) Stats IN: 2788 pkts, 115373
bytes; OUT: 2826 pkts, 118933 bytes<13> (mpls) Stats IN: 16482 pkts, 2467508 bytes; OUT:
0 pkts, 0 bytes<18> (lpts) Stats IN: 47234 pkts, 10381065 bytes; OUT: 0 pkts, 0 bytes<19>
```

(ipv6) Stats IN: 0 pkts, 0 bytes; OUT: 0 pkts, 0 bytes<30> (ipv4\_preroute) Stats IN: 0 pkts, 0 bytes; OUT: 0 pkts, 0 bytes<32> (ipv6\_preroute) Stats IN: 0 pkts, 0 bytes; OUT: 0 pkts, 0 bytes<34> (fint\_proto\_tp) Stats IN: 0 pkts, 0 bytes; OUT: 0 pkts, 0 bytes<36> (l2transport) Stats IN: 0 pkts, 0 bytes; OUT: 0 pkts, 0 bytes

您能也使用KornShell (ksh)命令“show\_netio\_fwder\_stats -g”检查是否请注入/平底船计数器增量。注意：在生产环境，可能有使困难检查的其他后台流量ping信息包是否到达了此组件。作为应急方案，您能以超时0使用数据包大量：“ping x.x.x.x计数10000次0”和检查计数器是否突然增加或有尖峰。Check initial counter value.

```
RP/0/RP0/CPU0:NCS6k-Deploy#run show_netio_fwder_stats -gRECEIVE STATISTICS SUMMARY:rx_pkts:
2224455punt_pkts: 2224447ingress_total_drops: 8TRANSMIT STATISTICS SUMMARY:inject_pkts:
2077319tx_pkts: 2058041egress_total_drops: 2RECEIVE STATISTICS DETAILS:Rx Pkt type stats:
lpts_pkts: 2220753Rx Listener tag stats: ipv4: 1116092 ipv6: 658627 clns: 112549
ipv4_l: 286252 raw4: 23 raw6: 43984 ospf_mc4: 45 ospf_mc6: 2 udp4: 7 tcp4: 405 isis:
2767Rx Punt reason stats: IFIB: 2220753Rx Drop stats: null_fint_ifh_drops: 8
ingress_total_drops: 8TRANSMIT STATISTICS DETAILS:Tx Pkt type stats: ipv4: 2852 mpls:
42647 osi: 78760 ipv4_preroute: 1339401 ipv6_preroute: 613659Tx Protocol Id stats:
clns: 78760 ipv4: 2852 mpls: 42647 ipv4_preroute: 1339401 ipv6_preroute: 613659Tx Drop
stats: invalid_queue_drops: 2 hdr_init_drops: 2 egress_total_drops: 2
```

Initiate 10 ping packets.

```
RP/0/RP0/CPU0:NCS6k-Deploy#ping 10.67.1.1 coun 10Type escape sequence to abort.Sending 10,
100-byte ICMP Echos to 10.67.1.1, timeout is 2 seconds:!!!!!!!!!!!!Success rate is 100
percent (10/10), round-trip min/avg/max = 3/4/7 ms
```

Check counter again to check to se increment of 10 packets.

```
RP/0/RP0/CPU0:NCS6k-Deploy#run show_netio_fwder_stats -gRECEIVE STATISTICS SUMMARY:rx_pkts:
2224465punt_pkts: 2224457 ingress_total_drops: 8TRANSMIT STATISTICS SUMMARY:inject_pkts:
2077332 tx_pkts: 2058051egress_total_drops: 2RECEIVE STATISTICS DETAILS:Rx Pkt type stats:
lpts_pkts: 2220763Rx Listener tag stats: ipv4: 1116102 ipv6: 658627 clns: 112549
ipv4_l: 286252 raw4: 23 raw6: 43984 ospf_mc4: 45 ospf_mc6: 2 udp4: 7 tcp4: 405 isis:
2767Rx Punt reason stats: IFIB: 2220763Rx Drop stats: null_fint_ifh_drops: 8
ingress_total_drops: 8TRANSMIT STATISTICS DETAILS:Tx Pkt type stats: ipv4: 2865 mpls:
42647 osi: 78760 ipv4_preroute: 1339401 ipv6_preroute: 613659Tx Protocol Id stats:
clns: 78760 ipv4: 2865 mpls: 42647 ipv4_preroute: 1339401 ipv6_preroute: 613659Tx Drop
stats: invalid_queue_drops: 2 hdr_init_drops: 2 egress_total_drops: 2
```

2RP/0/RP0/CPU0:NCS6k-Deploy#

### 3. 检查组分的SPP。请使用SPP CLI发现数据包是否到达了SPP。Check initial counter value.

```
RP/0/RP0/CPU0:NCS6k-Deploy#sh spp node-counters0/0/CPU0:pdma/rx          slicel high
pkts:          10-----pdma/tx          slicel low pkts:
10-----panini/classify          forwarded to spp clients:
10-----client/inject          pkts injected into spp:
10-----client/punt          punted to client:
10-----0/RP0/CPU0:panini/classify          forwarded to spp clients:
22070-----client/inject          pkts injected into spp:          4640-
-----socket/rx          ce low pkts:          45
mgmt interface pkts:          22025-----socket/tx
ce pkts:          45          mgmt interface pkts:          4595-----
-----client/punt          punted to client:          22070-----
```

Initiate 100 ping packets.

```
RP/0/RP0/CPU0:NCS6k-Deploy#ping 10.67.1.1 count 100Type escape sequence to abort.Sending
100, 100-byte ICMP Echos to 10.67.1.1, timeout is 2
seconds:!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!Success rate is 100 percent (100/100), round-trip min/avg/max = 3/3/8 ms
```

Check counter again to see increment of 100 packets.

```
RP/0/RP0/CPU0:NCS6k-Deploy#sh spp node-counters0/0/CPU0:pdma/rx          slicel high
pkts:          10-----pdma/tx          slicel low pkts:
10-----panini/classify          forwarded to spp clients:
10-----client/inject          pkts injected into spp:
10-----client/punt          punted to client:
10-----0/RP0/CPU0:panini/classify          forwarded to spp clients:
22172-----client/inject          pkts injected into spp:          4740
```

```

-----socket/rx                                ce low pkts:                                145
mgmt interface pkts:                            22027-----socket/tx
ce pkts:                                        145          mgmt interface pkts:          4595-----
-----client/punt punted to client:          22172 -----

```

4. 请使用tcpdump工具转存从Linux内核组件的数据包。 从输出下面，在NCS6K XR VM ksh下

```

Tue Jun 24
10:51:51.972 UTC[xr-vm_node0_RP0_CPU0:/]$ [xr-vm_node0_RP0_CPU0:/]$ ifconfig -aeth-vf1
Link encap:Ethernet HWaddr 46:91:EE:A5:48:A8          inet6 addr:
fe80::4491:eeff:fea5:48a8/64 Scope:Link              UP BROADCAST RUNNING MULTICAST MTU:9700
Metric:1      RX packets:518403076C3 errors:0 dropped:0 overruns:0 frame:0 TX
packets:969599306 errors:0 dropped:0 overruns:0 carrier:0 collisions:0 txqueuelen:1000 RX
bytes:138405352234 (128.9 GiB) TX bytes:242828863250 (226.1 GiB)eth-vf1.514 Link
encap:Ethernet HWaddr 4C:4E:35:B6:63:68 inet6 addr: fe80::4e4e:35ff:feb6:6368/64 Scope:Link
UP BROADCAST RUNNING MULTICAST MTU:9700 Metric:1 RX packets:13547000 errors:0 dropped:0
overruns:0 frame:0 TX packets:116957 errors:0 dropped:10 overruns:0 carrier:0 collisions:0
txqueuelen:0 RX bytes:623478135C3 (594.5 MiB) TX bytes:26876899 (25.6 MiB)eth-vf1.3073 Link
encap:Ethernet HWaddr 4C:4E:35:B6:63:69 inet6 addr:192.0.0.4 Bcast:192.255.255.255
Mask:255.0.0.0 inet6 addr: fe80::4e4e:35ff:feb6:6369/64 Scope:Link UP BROADCAST RUNNING
MULTICAST MTU:9700 Metric:1 RX packets:102364757 errors:0 dropped:0 overruns:0 frame:0 TX
packets:100689507 errors:0 dropped:3 overruns:0 carrier:0 collisions:0 txqueuelen:0 RX
bytes:29925046692 (27.8 GiB) TX bytes:7562528012 (7.0 GiB)eth-vf1.3074 Link encap:Ethernet
HWaddr 4E:41:50:00:10:01 inet6 addr:172.0.16.1 Bcast:172.255.255.255 Mask:255.0.0.0 inet6
addr: fe80::4c41:50ff:fe00:1001/64 Scope:Link UP BROADCAST RUNNING MULTICAST MTU:9700
Metric:1 RX packets:402491385 errors:0 dropped:0 overruns:0 frame:0 TX packets:350389778
errors:0 dropped:6 overruns:0 carrier:0 collisions:0 txqueuelen:0 RX bytes:100599198478
(93.6 GiB) TX bytes:96834116492 (90.1 GiB)lo Link encap:Local Loopback inet addr:127.0.0.1
Mask:255.0.0.0 inet6 addr: ::1/128 Scope:Host UP LOOPBACK RUNNING MTU:16436 Metric:1 RX
packets:1029861486 errors:0 dropped:0 overruns:0 frame:0 TX packets:1029861486 errors:0
dropped:0 overruns:0 carrier:0 collisions:0 txqueuelen:0 RX bytes:201624257033 (187.7 GiB)
TX bytes:201624257033 (187.7 GiB)eth-vf1.514使用与Mgmtether接口的通信，但是您看不到
IPv4地址。在XR VM的Mgmtether接口依靠IOS-XR IP协议栈而不是在Linux的IP协议栈。
ether-vf1.3073使用与Admin VM的通信。ether-vf1.3074使用XR VM涉及的控制层面流量。
Ping测试数据包将穿过此sub-interface (使用Linux网络协议栈)。 Tcpdump关联与Linux有批
次关于怎样的选项转存关注数据流。另外，您能使用tcpdump工具探测安全域路由器(SDR)控
制层面流量(VLAN 3074)或探测其他流量类似在VLAN 3073的Inter Process Communication
(IPC)通信。xr-vm_node0_RP0_CPU0:/]$ tcpdump -i eth-vf1.3074 -xx -vvtcpdump: listening on
eth-vf1.3074, link-type EN10MB (Ethernet), capture size 65535 bytes01:49:21.798386 IP (tos
0x6,ECT(0), ttl 1, id 0, offset 0, flags [DF], proto UDP (17), length 340)
172.0.16.1.10150 > 239.255.0.4.10150: [bad udp cksum ab2a!] UDP, length 312          0x0000:
0100 5e7f 0004 4e41 5000 1001 0800 4506  ..^...NAP....E.          0x0010:  0154 0000 4000
0111 cc8e ac00 1001 efff  .T..@.....          0x0020:  0004 27a6 27a6 0140 ad56 abcd
abcd 0000  ..'..'..@.V.....          0x0030:  0000 0280 f502 0000 0000 0000 0000 0000
.....          0x0040:  0000 0000 0000 7856 3412 0128 0204 0000  ....xV4..(....
0x0050:  0000 5508 0100 0100 0000 3c25 2600 0000  ..U.....<%&...          0x0060:  0000
d007 0000 0000 0000 ffff 0000 0000  ..          0x0070:  0000 0000 0000 0000
0000 0000 0000 0000  ..          0x0080:  0000 0000 0000 4800 0000 0200 0000
0000  .....H.....          0x0090:  0000 8800 0000 0000 0000 0000 0000 0000
.....          0x00a0:  0000 0100 0000 0000 0000 0000 0000 0000  ..
0x00b0:  0000 0000 0000 c2ca 0031 0000 0000 0000  ..1.....          0x00c0:  0000
0000 0000 0000 5508 0000 6510  ..          0x00d0:  0000 ed53 4c00 0000
0000 0000 0000 0000  ..SL.....          0x00e0:  0000 0000 0000 0000 0000 0000 0000
6264  ..          0x00f0:  7863 0000 0000 0000 0000 0000 0000 0000
xc.....          0x0100:  0000 0000 0000 0000 0000 0000 0000 0000  ..
0x0110:  0000 0100 0000 0000 0000 0000 0000 30ff  ..          0x0120:  0002
0000 0000 0000 0000 0000 0000 0000  ..          0x0130:  0000 0000 0000 0000
0000 0000 0000 0000  ..          0x0140:  0000 0000 0000 0000 0000 0c00 0000
0000  ..          0x0150:  0000 0000 0000 0000 0000 0000 0000 0000
.....          0x0160:  0000  ..01:49:21.799167
IP (tos 0x6,ECT(0), ttl 64, id 0, offset 0, flags [DF], proto UDP (17), length 380)
172.0.0.1.8197 > 172.0.16.1.8197: [udp sum ok] UDP, length 352          0x0000:  4e41 5000
1001 4e41 5000 0001 0800 4506  NAP...NAP....E.          0x0010:  017c 0000 4000 4011 d168

```









```

!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!Success rate is 100 percent (1000/1000), round-trip min/avg/max = 3/5/9 ms
Check counter again to see increment of 1000 packets.
RP/0/RP0/CPU0:NCS6k-Deploy#sh controllers plim ASIC statistics interface Ten0/0/0/2/0
Node: 0/0/CPU0-----
--TenGigE0/0/0/2/0 Tx Statistics-----Total Packets
: 3256 Total Bytes : 383884Total Good Packets : 3256 Total Good Bytes : 383884Unicast
Packets : 3256 Multicast Packets : 0Broadcast Packets :
0 64 Byte Packets : 665to127 Byte Packets : 3250
128to255 Byte Packets : 0256to511 Byte Packets : 0 512to1023 Byte
Packets : 01024to1518 Byte Packets : 0 1519to1522 Byte Packets :
01523to1548 Byte Packets : 0 1549to2000 Byte Packets : 02001to_MRU Byte
Packets : 0 Non Pause BPDU Packets : 0Classic Pause Packets : 0Class
Based Pause Pkts 0 : 0 Class Based Pause Pkts 1 : 0Class Based Pause Pkts 2
: 0 Class Based Pause Pkts 3 : 0Class Based Pause Pkts 4 : 0
Class Based Pause Pkts 5 : 0Class Based Pause Pkts 6 : 0 Class Based Pause
Pkts 7 : 0Dropped Packets=====Drained Packets : 0 Abort
: 0Length Error : 0 Giant : 0Tail Drop: HP
Queue : 0 Tail Drop: LP Queue : 0TenGigE0/0/0/2/0 Rx Statistics--
-----Total Packets : 3256 Total Bytes : 383884Total
Good Packets : 3256 Total Good Bytes : 383884Unicast Packets : 3256
Multicast Packets : 0Broadcast Packets : 0 64 Byte Packets
: 665to127 Byte Packets : 3250 128to255 Byte Packets : 0256to511 Byte
Packets : 0 512to1023 Byte Packets : 01024to1518 Byte Packets : 0
1519to1522 Byte Packets : 01523to1548 Byte Packets : 0 1549to2000 Byte
Packets : 02001to_MRU Byte Packets : 0 Non Pause BPDU Packets :
0Classic Pause Packets : 0Class Based Pause Pkts 0 : 0 Class Based Pause
Pkts 1 : 0Class Based Pause Pkts 2 : 0 Class Based Pause Pkts 3 : 0Class
Based Pause Pkts 4 : 0 Class Based Pause Pkts 5 : 0Class Based Pause Pkts 6
: 0 Class Based Pause Pkts 7 : 0Dropped Packets=====Runts
: 0 Fragments : 0Jumbo : 0
Jabber : 0CRC : 0 Code Error
: 0Code Violation : 0 Bad Preamble : 0IPG Violation
: 0Packet HPQ QoS Ctl Drop : 0 Bytes HPQ QoS Ctl Drop : 0Packet HPQ QoS
HP Drop : 0 Bytes HPQ QoS HP Drop : 0Packet HPQ Ctl Tail Drop : 0
Bytes HPQ Ctl Tail Drop : 0Packet HPQ HP Tail Drop : 0 Bytes HPQ HP Tail
Drop : 0Packet LPQ LP1 Tail Drop : 0 Bytes LPQ LP1 Tail Drop : 0Packet
LPQ LP2 Tail Drop : 0 Bytes LPQ LP2 Tail Drop : 0Packet TCAM Miss
: 0 Bytes TCAM Miss : 0Packet EOP Abort Drop : 0
Bytes EOP Abort Drop : 0Packet Policy Deny : 0 Bytes Policy Deny
: 0Rx Packet Drop Details=====Unknown Dest MAC Pkts : 0Unknown E-Type
Pkts : 0Unknown Encap Pkts : 0 Unknown Encap Bytes :
0Unknown VLAN Pkts : 0 Unknown VLAN Bytes : 0L2 Subif VLAN
Deny Pkts : 0 L2 Subif VLAN Deny Bytes : 0Rx Accepted Packet
Details=====Packet HPQ CTL Sent : 6 Bytes HPQ
CTL Sent : 384Packet HPQ HP Sent : 0 Bytes HPQ HP Sent :
0Packet LPQ LP1 Sent : 0 Bytes LPQ LP1 Sent : 0Packet LPQ LP2
Sent : 0 Bytes LPQ LP2 Sent : 0

```

8. 检查“show interface”计数器。是好想法检查此在第一步，但是依顺序数据包流这最后。它帮助识别，如果数据包发送到线路，并且，如果数据包从线路返回。它可帮助缩小问题是否是在箱或外部此方框里面。Check initial counter values.

```

RP/0/RP0/CPU0:NCS6k-Deploy#show inter ten 0/0/0/2/0TenGigE0/0/0/2/0 is up, line protocol is
up Interface state transitions: 1 Hardware is TenGigE, address is e051.2a0f.8c29 (bia
e051.2a0f.8c29) Description: Connected to 0/7/0/1 - CRS-F Internet address is
10.67.1.2/30 MTU 1514 bytes, BW 10000000 Kbit (Max: 10000000 Kbit) reliability 0/255,
txload 0/255, rxload 0/255 Encapsulation ARPA, Full-duplex, 10000Mb/s, SR, link type is
force-up output flow control is off, input flow control is off loopback not set, ARP
type ARPA, ARP timeout 04:00:00 Last input 00:14:22, output 00:14:22 Last clearing of
"show interface" counters 22:08:42 30 second input rate 0 bits/sec, 0 packets/sec 30
second output rate 0 bits/sec, 0 packets/sec 3256 packets input, 370860 bytes, 0 total
input drops 0 drops for unrecognized upper-level protocol Received 0 broadcast

```

packets, 0 multicast packets 0 runts, 0 giants, 0 throttles, 0 parity 0  
input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort 3256 packets output, 370860  
bytes, 0 total output drops Output 0 broadcast packets, 0 multicast packets 0  
output errors, 0 underruns, 0 applique, 0 resets 0 output buffer failures, 0 output  
buffers swapped out 0 carrier transitions

**Initiate 1000 ping packets.**RP/0/RP0/CPU0:NCS6k-Deploy#ping 10.67.1.1 cou 1000Type escape  
sequence to abort.Sending 1000, 100-byte ICMP Echos to 10.67.1.1, timeout is 2  
seconds:!!  
!!  
!!  
!!  
!!  
!!  
!!  
!!  
!!  
!!  
!!  
!!  
!!  
!!  
!!  
!!  
!!  
!!  
!!  
!!  
!!!!!!!Success rate is 100 percent (1000/1000), round-trip min/avg/max = 3/4/8 ms

**Check counter again to see increment of 1000 packets.**  
RP/0/RP0/CPU0:NCS6k-Deploy#show inter ten 0/0/0/2/0TenGigE0/0/0/2/0 is up, line protocol is  
up Interface state transitions: 1 Hardware is TenGigE, address is e051.2a0f.8c29 (bia  
e051.2a0f.8c29) Description: Connected to 0/7/0/1 - CRS-F Internet address is  
10.67.1.2/30 MTU 1514 bytes, BW 10000000 Kbit (Max: 10000000 Kbit) reliability  
255/255, txload 0/255, rxload 0/255 Encapsulation ARPA, Full-duplex, 10000Mb/s, SR, link  
type is force-up output flow control is off, input flow control is off loopback not set,  
ARP type ARPA, ARP timeout 04:00:00 Last input 00:00:00, output 00:00:00 Last clearing of  
"show interface" counters 22:09:38 30 second input rate 1000 bits/sec, 2 packets/sec 30  
second output rate 1000 bits/sec, 2 packets/sec 4256 packets input, 484860 bytes, 0  
total input drops 0 drops for unrecognized upper-level protocol Received 0  
broadcast packets, 0 multicast packets 0 runts, 0 giants, 0 throttles, 0  
parity 0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort 4256 packets  
**output**, 484860 bytes, 0 total output drops Output 0 broadcast packets, 0 multicast  
packets 0 output errors, 0 underruns, 0 applique, 0 resets 0 output buffer  
failures, 0 output buffers swapped out 0 carrier transitions