

ASR9000以太网环回测试

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使用环回接口测试以太网接口

如有必要，可以使用环回查找线卡、交换矩阵、网络处理器(NP)、收发器或光纤传输路径的问题。

有两种主要的环回类型：内部环回和外部环回。

*内部*环路可以远程执行，但提供的信息并不多。

*外部*环路必须在现场执行，但应提供大量的信息。

以下示例使用此接口：

```
RP/0/RSP0/CPU0:ASR9001-F# show run int tenGigE 0/0/1/1
interface TenGigE0/0/1/1
  ipv4 address 10.100.101.1 255.255.255.0
!
```

内部环回

这是一项基本测试，无需访问远程站点即可执行。它可以发现CPU、交换矩阵路径、NP和收发器问题，但无法发现光纤或传输问题。

配置环回

这会影响流量

```
RP/0/RSP0/CPU0:ASR9001-F# configure
RP/0/RSP0/CPU0:ASR9001-F(config)# int tenGigE 0/0/1/1
RP/0/RSP0/CPU0:ASR9001-F(config-if)# loopback internal
RP/0/RSP0/CPU0:ASR9001-F(config-if)# commit
RP/0/RSP0/CPU0:ASR9001-F(config-if)# end
```

clear counters

这将清除接口和控制器上的计数器。

```
RP/0/RSP0/CPU0:ASR9001-F# clear counters tenGigE 0/0/1/1
Clear "show interface" counters on this interface [confirm]
```

Ping本地IP

```
RP/0/RSP0/CPU0:ASR9001-F# ping 10.100.101.1 count 10000 size 1500 timeout 0
pings with timeout=0 may result in system instability and
control protocol flaps resulting in traffic impact.
DO you really want to continue[confirm with only 'y' or 'n'] [y/n] :y
Type escape sequence to abort.
Sending 10000, 1500-byte ICMP Echos to 10.100.101.1, timeout is 0 seconds:
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
```

[output omitted]

```
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
Success rate is 100 percent (10000/10000), round-trip min/avg/max = 1/1/5 ms
```

检查接口计数器

```
RP/0/RSP0/CPU0:ASR9001-F# show interfaces tenGigE 0/0/1/1
TenGigE0/0/1/1 is up, line protocol is up
  Interface state transitions: 3
  Hardware is TenGigE, address is 70e4.2217.ba65 (bia 70e4.2217.ba65)
  Layer 1 Transport Mode is LAN
  Internet address is 10.100.101.1/24
  MTU 1514 bytes, BW 10000000 Kbit (Max: 10000000 Kbit)
    reliability 255/255, txload 0/255, rxload 0/255
  Encapsulation ARPA,
  Full-duplex, 10000Mb/s, link type is force-up
  output flow control is off, input flow control is off
  loopback set (External),
  ARP type ARPA, ARP timeout 04:00:00
  Last input 00:00:00, output 00:00:00
  Last clearing of "show interface" counters 00:02:40
  5 minute input rate 685000 bits/sec, 126 packets/sec
  5 minute output rate 685000 bits/sec, 126 packets/sec
    10003 packets input, 15140657 bytes, 0 total input drops 0 drops for unrecognized upper-
level protocol Received 0 broadcast packets, 3 multicast packets 0 runts, 0 giants, 0 throttles,
0 parity 0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort 10003 packets output,
15140657 bytes, 0 total output drops Output 0 broadcast packets, 3 multicast packets 0 output
errors, 0 underruns, 0 applique, 0 resets 0 output buffer failures, 0 output buffers swapped out
0 carrier transitions
```

检查控制器计数器

```
RP/0/RSP0/CPU0:ASR9001-F# show controllers tenGigE 0/0/1/1 stats  
Statistics for interface TenGigE0/0/1/1 (cached values):
```

Ingress:

```
Input total bytes          = 15140657  
Input good bytes          = 15140657
```

```
Input total packets = 10003 Input 802.1Q frames = 0 Input pause frames = 0 Input pkts 64  
bytes = 0 Input pkts 65-127 bytes = 0 Input pkts 128-255 bytes = 3 Input pkts 256-511 bytes = 0  
Input pkts 512-1023 bytes = 0 Input pkts 1024-1518 bytes = 10000 Input pkts 1519-Max bytes = 0  
Input good pkts = 10003 Input unicast pkts = 10000 Input multicast pkts = 3 Input broadcast pkts  
= 0 Input drop overrun = 0 Input drop abort = 0 Input drop invalid VLAN = 0 Input drop invalid  
DMAC = 0 Input drop invalid encap = 0 Input drop other = 0 Input error giant = 0 Input error  
runt = 0 Input error jabbers = 0 Input error fragments = 0 Input error CRC = 0 Input error  
collisions = 0 Input error symbol = 0 Input error other = 0 Input MIB giant = 0 Input MIB jabber  
= 0 Input MIB CRC = 0 Egress: Output total bytes = 15140657 Output good bytes = 15140657 Output  
total packets = 10003 Output 802.1Q frames = 0 Output pause frames = 0 Output pkts 64 bytes = 0  
Output pkts 65-127 bytes = 0 Output pkts 128-255 bytes = 3 Output pkts 256-511 bytes = 0 Output  
pkts 512-1023 bytes = 0 Output pkts 1024-1518 bytes = 10000 Output pkts 1519-Max bytes = 0  
Output good pkts = 10003 Output unicast pkts = 10000 Output multicast pkts = 3 Output broadcast  
pkts = 0 Output drop underrun = 0 Output drop abort = 0 Output drop other = 0 Output error other  
= 0
```

外部环回

此测试验证线卡中央处理器(CPU)、交换矩阵路径、NP、收发器和光纤。

此测试需要一段光缆，以便将发送(Tx)信号物理地环接到接收(Rx)端口。

配置环回

这会影影响流量

```
RP/0/RSP0/CPU0:ASR9001-F# configure  
RP/0/RSP0/CPU0:ASR9001-F(config)# interface tenGigE 0/0/1/1  
RP/0/RSP0/CPU0:ASR9001-F(config-if)# loopback external  
RP/0/RSP0/CPU0:ASR9001-F(config-if)# commit  
RP/0/RSP0/CPU0:ASR9001-F(config-if)# end
```

clear counters

这将清除接口和控制器上的计数器。

```
RP/0/RSP0/CPU0:ASR9001-F# clear counters  
Clear "show interface" counters on all interfaces [confirm]
```

Ping本地IP

```
RP/0/RSP0/CPU0:ASR9001-F# ping 10.100.101.1 count 10000 size 1500 timeout 0  
pings with timeout=0 may result in system instability and  
control protocol flaps resulting in traffic impact.  
DO you really want to continue[confirm with only 'y' or 'n'] [y/n] :y  
Type escape sequence to abort.
```

Sending 10000, 1500-byte ICMP Echos to 10.100.101.1, timeout is 0 seconds:
!!

[output omitted]

!!
!!
Success rate is 100 percent (10000/10000), round-trip min/avg/max = 1/1/5 ms

检查接口计数器

RP/0/RSP0/CPU0:ASR9001-F# **show interfaces tenGigE 0/0/1/1**

TenGigE0/0/1/1 is up, line protocol is up
Interface state transitions: 7
Hardware is TenGigE, address is 70e4.2217.ba65 (bia 70e4.2217.ba65)
Layer 1 Transport Mode is LAN
Internet address is 10.100.101.1/24
MTU 1514 bytes, BW 10000000 Kbit (Max: 10000000 Kbit)
reliability 255/255, txload 0/255, rxload 0/255
Encapsulation ARPA,
Full-duplex, 10000Mb/s, link type is force-up
output flow control is off, input flow control is off
loopback set (Internal),
ARP type ARPA, ARP timeout 04:00:00
Last input 00:00:00, output 00:00:00
Last clearing of "show interface" counters 00:00:32
5 minute input rate 504000 bits/sec, 52 packets/sec
5 minute output rate 504000 bits/sec, 52 packets/sec
10001 packets input, 15140219 bytes, 0 total input drops 0 drops for unrecognized upper-level protocol Received 0 broadcast packets, 1 multicast packets 0 runts, 0 giants, 0 throttles, 0 parity 0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort **10001 packets output**, 15140219 bytes, 0 total output drops Output 0 broadcast packets, 1 multicast packets 0 output errors, 0 underruns, 0 applique, 0 resets 0 output buffer failures, 0 output buffers swapped out 0 carrier transitions

检查控制器计数器

RP/0/RSP0/CPU0:ASR9001-F# **show controllers tenGigE 0/0/1/1 stats**

Statistics for interface TenGigE0/0/1/1 (cached values):

Ingress:

Input total bytes = 15140219
Input good bytes = 15140219

Input total packets = 10001 Input 802.1Q frames = 0 Input pause frames = 0 Input pkts 64 bytes = 0 Input pkts 65-127 bytes = 0 Input pkts 128-255 bytes = 1 Input pkts 256-511 bytes = 0 Input pkts 512-1023 bytes = 0 **Input pkts 1024-1518 bytes = 10000** Input pkts 1519-Max bytes = 0 **Input good pkts = 10001** **Input unicast pkts = 10000** Input multicast pkts = 1 Input broadcast pkts = 0 Input drop overrun = 0 Input drop abort = 0 Input drop invalid VLAN = 0 Input drop invalid DMAC = 0 Input drop invalid encap = 0 Input drop other = 0 Input error giant = 0 Input error runt = 0 Input error jabbers = 0 Input error fragments = 0 Input error CRC = 0 Input error collisions = 0 Input error symbol = 0 Input error other = 0 Input MIB giant = 0 Input MIB jabber = 0 Input MIB CRC = 0 Egress: Output total bytes = 15140219 Output good bytes = 15140219 **Output total packets = 10001** Output 802.1Q frames = 0 Output pause frames = 0 Output pkts 64 bytes = 0 Output pkts 65-127 bytes = 0 Output pkts 128-255 bytes = 1 Output pkts 256-511 bytes = 0 Output pkts 512-1023 bytes = 0 **Output pkts 1024-1518 bytes = 10000** Output pkts 1519-Max bytes = 0 **Output good pkts = 10001** **Output unicast pkts = 10000** Output multicast pkts = 1 Output broadcast pkts = 0 Output drop underrun = 0 Output drop abort = 0 Output drop other = 0 Output error other = 0

参考

[Cisco ASR 9000系列聚合服务路由器接口和硬件组件命令参考，版本4.3.x章节：Cisco ASR 9000系列路由器上的以太网接口命令](#)

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