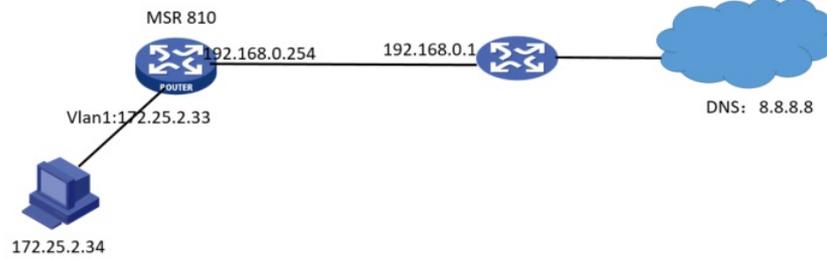


The problem that the equipment at a certain site cannot ping the external network

Static routing Xushuai 2021-12-30 16:15:20 Published

Network Topology

topology:



Problem Description

The customer reported that a static route out of the public network was configured on the MSR810, but the PC under the router could not access the public network.

Process Analysis

1. First check the configuration of static routing and the routing table on the router.
We see that the next hop of the route out of the Internet is specified as 192.168.0.1:
ip route-static 0.0.0.0 GigabitEthernet0/4 192.168.0.1
2. Carry the PC gateway address on the router to ping to test the next hop and the public network dns address 8.8.8.8, the access is reachable
3. But ping the public network on the PC is unreachable
4. we tested the packet analysis of the router g0/4 interface in three scenarios as follows:

1) Firstly, ping the next hop (192.168.0.1) of our device on the PC, the PC can receive the icmp reply packet normally

[PC]ping -S 172.25.2.34 192.168.0.1 result OK

Capture packets on router g0/4 and find that ttl=64, so the router can forward the packet to the PC normally

Time	Source	Destination	Protocol	Length	Info
400.292.469390	192.168.0.107	192.168.0.1	ICMP	74	Echo (ping) request id=0x0007, seq=2980/41995, ttl=64 (request in 400)
401.292.470468	192.168.0.1	192.168.0.107	ICMP	74	Echo (ping) reply id=0x0007, seq=2980/41995, ttl=64 (request in 400)
402.293.492666	192.168.0.107	192.168.0.1	ICMP	74	Echo (ping) request id=0x0007, seq=2981/42251, ttl=64 (request in 402)
403.293.492666	192.168.0.1	192.168.0.107	ICMP	74	Echo (ping) reply id=0x0007, seq=2981/42251, ttl=64 (request in 402)
408.294.516768	192.168.0.107	192.168.0.1	ICMP	74	Echo (ping) request id=0x0007, seq=2982/42507, ttl=64 (request in 408)
409.294.516768	192.168.0.1	192.168.0.107	ICMP	74	Echo (ping) reply id=0x0007, seq=2982/42507, ttl=64 (request in 408)
411.295.548184	192.168.0.1	192.168.0.107	ICMP	74	Echo (ping) reply id=0x0007, seq=2983/42763, ttl=64
412.295.548186	192.168.0.107	192.168.0.1	ICMP	74	Echo (ping) request id=0x0007, seq=2983/42763, ttl=127 (no response found!)
414.296.561961	192.168.0.1	192.168.0.107	ICMP	74	Echo (final) reply id=0x0007, seq=2984/43019, ttl=64

Because the router has done nat configuration, the source address of the packet is 192.168.0.107 of the public network interface rather 172.25.2.34.

2) Ping the public network address 103.235.46.39 on the router, and a response packet is displayed on the router. But the returned message shows **ttl=1**. Since the destination IP of the returned message is the router itself, the packet is reachable.

[H3C]ping -S 172.25.2.33 103.235.46.39 Result OK

* 714.384.314848	192.168.0.107	103.235.46.39	ICMP	98	Echo (ping) request id=0x0009, seq=3/256, ttl=255 (reply in 715)
715.384.402635	103.235.46.39	192.168.0.107	ICMP	74	Echo (ping) reply id=0x0009, seq=2/256, ttl=1 (request in 714)
716.384.420820	192.168.0.107	103.235.46.39	ICMP	98	Echo (ping) request id=0x0009, seq=2/512, ttl=255 (reply in 717)
717.384.740219	103.235.46.39	192.168.0.107	ICMP	98	Echo (ping) reply id=0x0009, seq=2/512, ttl=1 (request in 716)
718.384.942164	192.168.0.107	103.235.46.39	ICMP	98	Echo (ping) request id=0x0009, seq=3/768, ttl=255 (reply in 719)
* 719.385.854515	103.235.46.39	192.168.0.107	ICMP	98	Echo (ping) reply id=0x0009, seq=3/768, ttl=1 (request in 718)

3. Ping the public network address 103.235.46.39 on the PC, Show no response packets

[PC]ping -S 172.25.2.33 103.235.46.39 Result cannot be available

After capturing packets on the router, it is found that **ttl=1**, and packets with **ttl=1** can only access the own device itself, and cannot be forwarded to other devices.

There is also a packet showing time to live exceed, which means that the ttl has been exhausted and the packet can no longer be forwarded.

818.418.015360	192.168.0.107	103.235.46.39	ICMP	74	Echo (ping) request id=0x000d, seq=1087/3852, ttl=127 (reply in 819)
819.418.127862	103.235.46.39	192.168.0.107	ICMP	74	Echo (ping) reply id=0x000d, seq=1087/3852, ttl=1 (request in 818)
820.418.127862	192.168.0.107	103.235.46.39	ICMP	70	Time to live exceeded (Time to live exceeded in transit)
837.423.010684	192.168.0.107	103.235.46.39	ICMP	74	Echo (ping) request id=0x000d, seq=1088/4108, ttl=127 (reply in 838)
838.423.131882	103.235.46.39	192.168.0.107	ICMP	74	Echo (ping) reply id=0x000d, seq=1088/4108, ttl=1 (request in 837)
839.423.131882	192.168.0.107	103.235.46.39	ICMP	70	Time to live exceeded (Time to live exceeded in transit)
847.428.010315	192.168.0.107	103.235.46.39	ICMP	74	Echo (ping) request id=0x000d, seq=1089/4364, ttl=127 (reply in 848)
848.428.135560	103.235.46.39	192.168.0.107	ICMP	74	Echo (ping) reply id=0x000d, seq=1089/4364, ttl=1 (request in 847)
849.428.135560	192.168.0.107	103.235.46.39	ICMP	70	Time to live exceeded (Time to live exceeded in transit)
856.433.015376	192.168.0.107	103.235.46.39	ICMP	74	Echo (ping) request id=0x000d, seq=1090/4620, ttl=127 (reply in 857)
857.433.131689	103.235.46.39	192.168.0.107	ICMP	74	Echo (ping) reply id=0x000d, seq=1090/4620, ttl=1 (request in 856)
858.433.131689	192.168.0.107	103.235.46.39	ICMP	70	Time to live exceeded (Time to live exceeded in transit)
865.438.016596	192.168.0.107	103.235.46.39	ICMP	74	Echo (ping) request id=0x000d, seq=1091/4876, ttl=127 (reply in 866)
866.438.129234	103.235.46.39	192.168.0.107	ICMP	74	Echo (ping) reply id=0x000d, seq=1091/4876, ttl=1 (request in 865)
867.438.129234	192.168.0.107	103.235.46.39	ICMP	70	Time to live exceeded (Time to live exceeded in transit)
870.443.017596	192.168.0.107	103.235.46.39	ICMP	74	Echo (ping) request id=0x000d, seq=1092/5132, ttl=127 (reply in 871)
871.443.120878	103.235.46.39	192.168.0.107	ICMP	74	Echo (ping) reply id=0x000d, seq=1092/5132, ttl=1 (request in 870)
872.443.120878	192.168.0.107	103.235.46.39	ICMP	70	Time to live exceeded (Time to live exceeded in transit)
874.448.017014	192.168.0.107	103.235.46.39	ICMP	74	Echo (final) request id=0x000d, seq=1093/5388, ttl=127 (reply in 875)

Conclusion: The **ttl=1** of the packets forwarded from other devices (192.168.0.1), which caused our device to be unable to forward the packets to the PC. The normal response message **ttl** cannot be equal to 1, otherwise the packet cannot be forwarded.

Therefore, we speculate that it is related to the device of the next hop (192.168.0.1). The return packet pass through from this device **ttl=1**, and return packet destination to the device **ttl=64**. This phenomenon may be related to the mechanism of this device. It is recommended to check this the mechanism of the device.

Solution

The H3C router forwards normally, check the third-party device's return packet ttl=1 problem.

