与默认路由的ISP故障切换使用IP SLA跟踪

Contents

Introduction

本文描述如何配置广域网(或ISP)冗余，多个广域网链接在同样末端路由器终止。 本文也解释对configure network地址转换(NAT)，当有互联网连通性的多个ISP's，并且时您如何想要无缝的故障切换即，当主要ISP沿着走第二然后接管与与使用的正确的NAT第二ISP的公共IP地址时。

Prerequisites

Requirements

There are no specific requirements for this document. 在设备和平台必须支持创建IP基本的了解SLA和静态Routing.Configuration IP SLA。

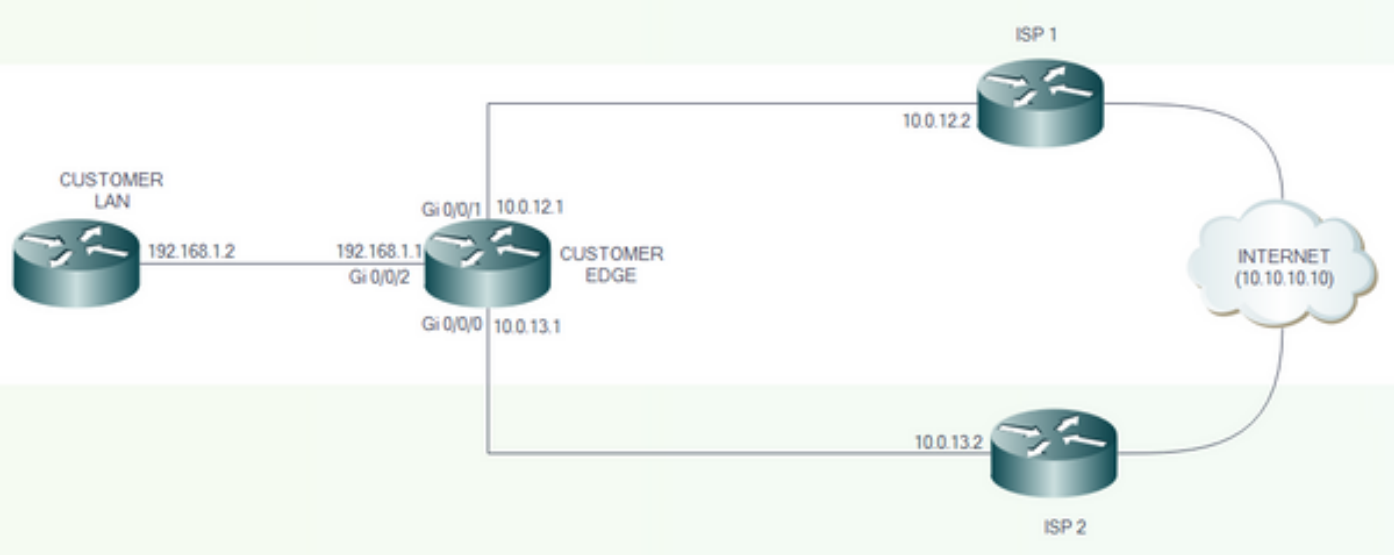
Components Used

This document is not restricted to specific software and hardware versions.它适用于运行Cisco IOS的所有Cisco路由器，并且可以配置的地方IP SLA和跟踪。

The information in this document was created from the devices in a specific lab environment.All of the devices used in this document started with a cleared (default) configuration.如果网络实际，请切记您了解所有命令的潜在影响。

Configure

Network Diagram



配置

ISP 1和ISP 2直接地连接到互联网。对于测试目的，请作为在互联网的一个参考请使用IP地址10.10.10.10。

用户边缘路由器配置

接口配置

```
interface GigabitEthernet0/0/1
description PRIMARY LINK TO ISP 1
ip address 10.0.12.1 255.255.255.252
ip nat outside
negotiation auto


interface GigabitEthernet0/0/0
 description BACKUP LINK TO ISP 2
 ip address 10.0.13.1 255.255.255.252
ip nat outside negotiation auto
```

跟踪、IP SLA和默认路由配置。

```
track 8 ip sla 1 reachability

ip sla 1
 icmp-echo 10.0.12.2 source-ip 10.0.12.1
ip sla schedule 1 life forever start-time now

ip route 0.0.0.0 0.0.0.0 10.0.12.2 track 8
ip route 0.0.0.0 0.0.0.0 10.0.13.2 10
```

当跟踪8是UP时，对互联网的数据流流经ISP 1。

```
CustomerEdge#sh ip route static
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
```

```
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-user static route
       o - ODR, P - periodic downloaded static route, H - NHRP, l - LISP
       a - application route
       + - replicated route, % - next hop override, p - overrides from PfR

Gateway of last resort is 10.0.12.2 to network 0.0.0.0

S*    0.0.0.0/0 [1/0] via 10.0.12.2
```

当跟踪8是DOWN时，对互联网的数据流流经ISP 2。

```
CustomerEdge#sh ip route static
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-user static route
       o - ODR, P - periodic downloaded static route, H - NHRP, l - LISP
       a - application route
       + - replicated route, % - next hop override, p - overrides from PfR

Gateway of last resort is 10.0.13.2 to network 0.0.0.0

S*    0.0.0.0/0 [10/0] via 10.0.13.2
```

Cisco 建议

Note:当您配置IP SLA时， Cisco推荐这些默认值：

1. Threshold(millisecs) ：5000
2. Timeout(millisecs) ：5000
3. Frequency(secs) ：60

NAT故障切换的另外的配置：

```
interface GigabitEthernet0/0/2
 description TOWARDS CUSTOMER LAN
 ip address 192.168.1.1 255.255.255.0
ip nat inside negotiation auto

!
ip access-list extended 101
 permit ip 192.168.1.0 0.0.0.255 any
!



!
route-map NAT_ISP2 permit 10
 match ip address 101
 match interface GigabitEthernet0/0/0
!
route-map NAT_ISP1 permit 10
```

```
 match ip address 101
 match interface GigabitEthernet0/0/1
!
```

路由映射被创建匹配访问列表定义的IP地址101并且匹配`退出接口。

```
ip nat inside source route-map NAT_ISP1 interface GigabitEthernet0/0/1 overload
ip nat inside source route-map NAT_ISP2 interface GigabitEthernet0/0/0 overload
```

这些enable命令端口地址转换(PAT)，其中被转换的IP地址是由路由映射定义的。将被转换的IP地址成在接口关键字以后被定义。

Verify

使用本部分可确认配置能否正常运行。

跟踪状态可以验证与使用**show track命令**。

```
CustomerEdge#show track
Track 8
  IP SLA 1 reachability
  Reachability is Up
    7 changes, last change 00:00:17
  Latest operation return code: OK
  Latest RTT (millisecs) 1
  Tracked by:
    Static IP Routing 0
```

当主要ISP链路是UP时，数据流流经它。

```
CustomerEdge#traceroute 10.10.10.10
Type escape sequence to abort.
Tracing the route to 10.10.10.10
VRF info: (vrf in name/id, vrf out name/id)
  1 10.0.12.2 1 msec *  0 msec
```

当主要ISP链路下降时，辅助链路发生故障。

```
CustomerEdge#traceroute 10.10.10.10
Type escape sequence to abort.
Tracing the route to 10.10.10.10
VRF info: (vrf in name/id, vrf out name/id)
  1 10.0.13.2 1 msec *  1 msec
```

一旦主要ISP链路的链路恢复，数据流自动地开始流经它。

同样NAT故障切换：

```
CustomerLAN#ping 10.10.10.10
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.10.10.10, timeout is 2 seconds:
```

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


CustomerLAN#sh ip route 10.10.10.10
Routing entry for 10.10.10.10/32
  Known via "static", distance 1, metric 0
  Routing Descriptor Blocks:
  * 192.168.1.1
      Route metric is 0, traffic share count is 1
```

当主要ISP链路是UP时， NAT转换通过主要ISP链路发生。

```
CustomerEdge#sh ip nat translations
Pro  Inside global         Inside local          Outside local         Outside global
icmp 10.0.12.1:1           192.168.1.2:12        10.10.10.10:12        10.10.10.10:1
Total number of translations: 1
```

当主要ISP链路下降时， NAT转换通过附属ISP链路发生。

```
CustomerEdge#sh ip nat translations
Pro  Inside global         Inside local          Outside local         Outside global
icmp 10.0.13.1:1           192.168.1.2:13        10.10.10.10:13        10.10.10.10:1
Total number of translations: 1
```

当主要ISP链路恢复时， NAT转换通过主要ISP链路发生

Troubleshoot

本部分提供了可用于对配置进行故障排除的信息。

必须主要从静态路由、IP SLA和跟踪配置方面执行排除故障。

主要，当您分析主链路的故障的原因在这样方案，请排除故障开始。