

排除SD-WAN动态按需隧道故障

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简介

本文档介绍在配置或检查与SD-WAN动态按需隧道相关的问题时可以使用的故障排除命令。

前提条件

使用的组件

本文档基于以下配置参考、软件和硬件版本：

- vManage版本20.9.3
- 边缘路由器ISR4K版本17.9.3
- 所有设备都配置为根据官方文档建立动态按需隧道

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。如果您的网络处于活动状态，请确保您了解所有命令的潜在影响。



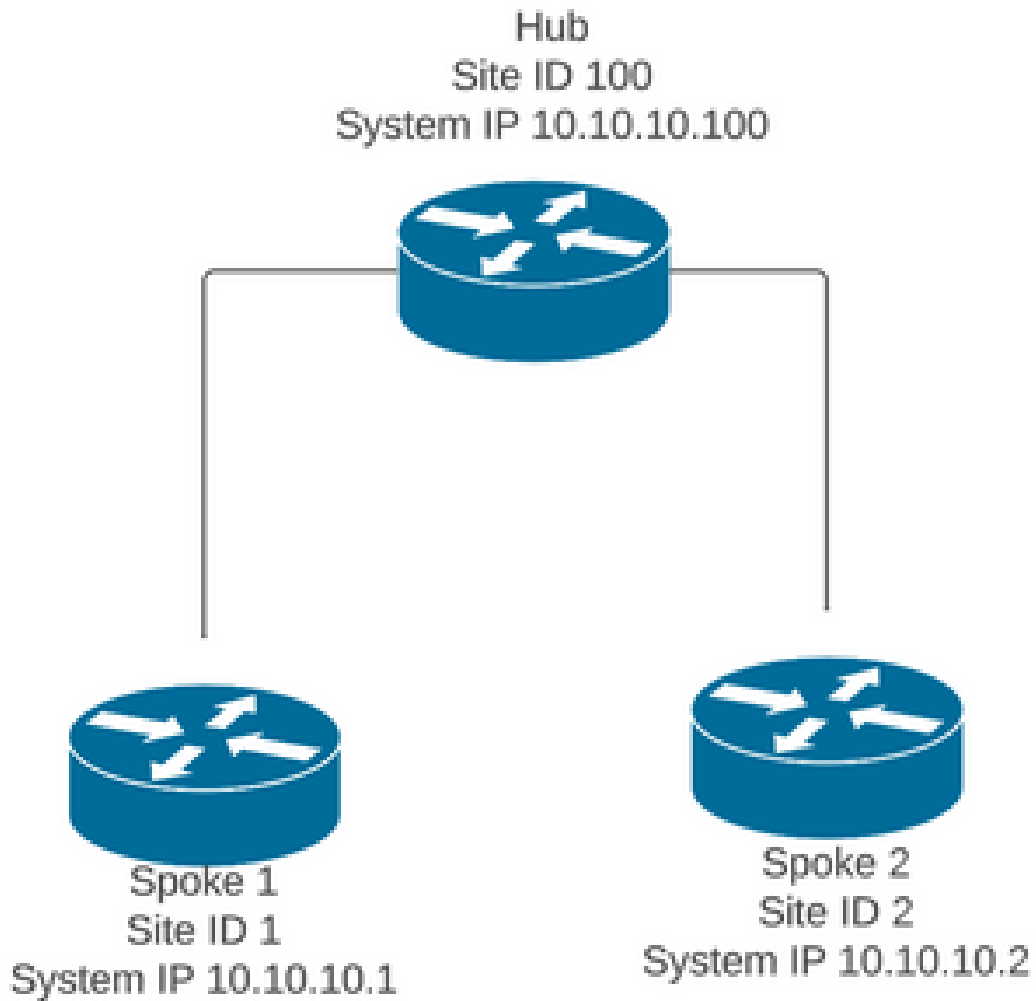
注意：请参阅本文档了解[动态按需隧道](#)配置。

背景信息

Cisco SD-WAN支持任意两个Cisco SD-WAN分支设备之间的动态按需隧道。仅当两台设备之间存在流量时，才会触发这些隧道进行设置，从而优化带宽使用率和设备性能。

工作场景

使用的拓扑



在正常操作情况下，按需隧道触发条件如下：

- 在show sdwan bfd sessions中，无法建立辐射点之间的BFD会话，或者该会话即使显示为关闭
- 在终端之间发送相关流量时，可以触发BFD会话
- 必须设置和确认基本[动态按需隧道配置](#)

触发按需隧道激活

- 最初，分支之间的BFD会话未启动，只有从分支到中心点的会话处于启动状态，并且按需系统状态在分支和OMP表中都显示为非活动状态，从中心点的备份路由设置为C、I、R，而从分支2的路由设置为I、U、IA

<#root>

Spoke 1#show sdwan bfd sessions

SYSTEM IP	SITE ID	STATE	SOURCE TLOC COLOR	REMOTE TLOC COLOR	SOURCE IP	DST PUBLIC IP	DST PUBLIC PORT	ENCAP	DETECT MULTIP
10.10.10.100	100	up	blue	blue	10.10.10.1	10.100.100.1	12366	ipsec	7

Spoke 1#show sdwan system on-demand remote-system

SITE-ID SYSTEM-IP

ON-DEMAND STATUS

IDLE-TIMEOUT-EXPIRY(sec)

```
-----  
2      10.10.10.2  
  
yes      inactive  
  
-
```

Spoke 1#show sdwan omp routes vpn 10 10.2.2.2/32

Generating output, this might take time, please wait ...

Code:

C -> chosen
I -> installed
Red -> redistributed
Rej -> rejected
L -> looped
R -> resolved
S -> stale
Ext -> extranet
Inv -> invalid
Stg -> staged
IA -> On-demand inactive
U -> TLOC unresolved
BR-R -> border-router reoriginated
TGW-R -> transport-gateway reoriginated

TENANT	VPN	PREFIX	FROM	PEER	PATH ID	PATH LABEL	STATUS	ATTRIBUTE TYPE	TLOC IP	COLOR	ENCAP	PRE
0	10	10.2.2.2/32	192.168.0.1	61	1005		C,I,R	installed	10.10.10.100	blue	ipsec	-
			192.168.0.1	62	1003		I,U,IA	installed	10.10.10.2	default	ipsec	-
			192.168.0.1	64	1005		C,R	installed	10.10.10.100	blue	ipsec	-
			192.168.0.1	65	1003		I,U,IA	installed	10.10.10.2	private1	ipsec	-
			192.168.0.1	67	1005		Inv,U	installed	10.10.10.100	blue	ipsec	-
			192.168.0.1	68	1003		I,U,IA	installed	10.10.10.2	private2	ipsec	-
			192.168.0.2	71	1005		C,R	installed	10.10.10.100	blue	ipsec	-
			192.168.0.2	72	1003		U,IA	installed	10.10.10.2	default	ipsec	-
			192.168.0.2	74	1005		C,R	installed	10.10.10.100	blue	ipsec	-
			192.168.0.2	75	1003		U,IA	installed	10.10.10.2	private1	ipsec	-
			192.168.0.2	77	1005		Inv,U	installed	10.10.10.100	blue	ipsec	-
			192.168.0.2	78	1003		U,IA	installed	10.10.10.2	private2	ipsec	-

Spoke 2#show sdwan bfd sessions

SYSTEM IP	SITE ID	STATE	SOURCE COLOR	TLOC	REMOTE COLOR	TLOC	SOURCE IP	DST PUBLIC IP	DST PUBLIC PORT	ENCAP	DETE
10.10.10.100	100	up	blue		blue		10.10.10.2	10.100.100.1	12366	ipsec	7

```
Spoke 2#show sdwan system on-demand remote-system
```

```
SITE-ID SYSTEM-IP
```

```
ON-DEMAND STATUS
```

```
IDLE-TIMEOUT-EXPIRY(sec)
```

```
-----  
1      10.10.10.1  
  
yes      inactive  
-  
-  
-
```

- 要触发按需隧道激活，需要关注流量。在本示例中，使用ICMP流量，在发送流量后，按需远程系统的状态从两端的inactive状态更改为active状态，并且OMP表中的目标前缀从C、I、R状态从Hub更改为C、I、R状态（从Spoke 2）

```
<#root>
```

```
Spoke 1#ping vrf 10 10.2.2.2 re 20
```

```
Type escape sequence to abort.
```

```
Sending 20, 100-byte ICMP Echos to 10.2.2.2, timeout is 2 seconds:
```

```
!!!!!!!!!!!!!!!!!!!!!!!
```

```
Success rate is 100 percent (20/20), round-trip min/avg/max = 1/3/31 ms
```

```
Spoke 1#show sdwan system on-demand remote-system
```

```
SITE-ID SYSTEM-IP
```

```
ON-DEMAND STATUS
```

```
IDLE-TIMEOUT-EXPIRY(sec)
```

```
-----  
2      10.10.10.2  
  
yes      active  
  
56
```

```
Spoke 1#show sdwan bfd sessions
```

SYSTEM IP	SITE ID	STATE	SOURCE TLOC COLOR	REMOTE TLOC COLOR	SOURCE IP	DST PUBLIC IP	DST PUBLIC PORT	ENCAP	DETECT TX MULTIPLIER
10.10.10.100	100	up	blue	blue	10.10.10.1	10.100.100.1	12366	ipsec	7
10.10.10.2	2	up	default	default	10.10.10.1	10.12.12.2	12366	ipsec	7
10.10.10.2	2	up	blue	blue	10.10.10.1	10.12.12.2	12366	ipsec	7

Spoke 1#

show sdwan omp routes vpn 10 10.2.2.2/32

Generating output, this might take time, please wait ...

Code:

C -> chosen

I -> installed

Red -> redistributed

Rej -> rejected

L -> looped

R -> resolved

S -> stale

Ext -> extranet

Inv -> invalid

Stg -> staged

IA -> On-demand inactive

U -> TLOC unresolved

BR-R -> border-router reoriginated

TGW-R -> transport-gateway reoriginated

TENANT	VPN PREFIX	PATH		STATUS	ATTRIBUTE		TLOC IP	COLOR	ENCAP P
		FROM PEER	ID LABEL		TYPE				
0	10 10.2.2.2/32	192.168.0.1	61 1005	R	installed		10.10.10.100	blue	ipsec
		192.168.0.1	62 1003	C,I,R	installed		10.10.10.2	default	ipsec
		192.168.0.1	64 1005	R	installed		10.10.10.100	blue	ipsec
		192.168.0.1	65 1003	C,I,R	installed		10.10.10.2	private1	ipsec
		192.168.0.1	67 1005	Inv,U	installed		10.10.10.100	blue	ipsec
		192.168.0.1	68 1003	C,I,R	installed		10.10.10.2	private2	ipsec
		192.168.0.2	71 1005	R	installed		10.10.10.100	blue	ipsec
		192.168.0.2	72 1003	C,R	installed		10.10.10.2	default	ipsec
		192.168.0.2	74 1005	R	installed		10.10.10.100	blue	ipsec
		192.168.0.2	75 1003	C,R	installed		10.10.10.2	private1	ipsec
		192.168.0.2	77 1005	Inv,U	installed		10.10.10.100	blue	ipsec
		192.168.0.2	78 1003	C,R	installed		10.10.10.2	private2	ipsec

Spoke 2#show sdwan system on-demand remote-system

SITE-ID SYSTEM-IP

ON-DEMAND STATUS

IDLE-TIMEOUT-EXPIRY(sec)

```
-----  
1      10.10.10.1  
  
yes      active
```

53

Spoke 2#show sdwan bfd sessions

SYSTEM IP	SITE ID	STATE	SOURCE TLOC COLOR	REMOTE TLOC COLOR	SOURCE IP	DST PUBLIC IP	DST PUBLIC PORT	ENCAP	DETECT MULTIPLIER
10.10.10.100	100	up	blue	blue	10.10.10.2	10.100.100.1	12366	ipsec	7
10.10.10.1	2	up	default	default	10.10.10.2	10.11.11.1	12366	ipsec	7
10.10.10.1	2	up	blue	blue	10.10.10.2	10.11.11.1	12366	ipsec	7

- 在兴趣流量停止且空闲超时过期后，分支之间的BFD会话消失，按需状态返回非活动状态，路由从OMP表中的中心返回到C、I、R备份路由状态

<#root>

Spoke 1#show sdwan bfd sessions

SYSTEM IP	SITE ID	STATE	SOURCE TLOC COLOR	REMOTE TLOC COLOR	SOURCE IP	DST PUBLIC IP	DST PUBLIC PORT	ENCAP	DETECT MULTIPLIER
10.10.10.100	100	up	blue	blue	10.10.10.1	10.100.100.1	12366	ipsec	7

Spoke 1#show sdwan system on-demand remote-system

SITE-ID SYSTEM-IP

ON-DEMAND STATUS

IDLE-TIMEOUT-EXPIRY(sec)

2 10.10.10.2

yes inactive

-

Spoke 2#show sdwan bfd sessions

SYSTEM IP	SITE ID	STATE	SOURCE TLOC COLOR	REMOTE TLOC COLOR	SOURCE IP	DST PUBLIC IP	DST PUBLIC PORT	ENCAP	DETECT MULTIPLIER
10.10.10.100	100	up	blue	blue	10.10.10.2	10.100.100.1	12366	ipsec	7

Spoke 2#show sdwan system on-demand remote-system

SITE-ID SYSTEM-IP

ON-DEMAND STATUS

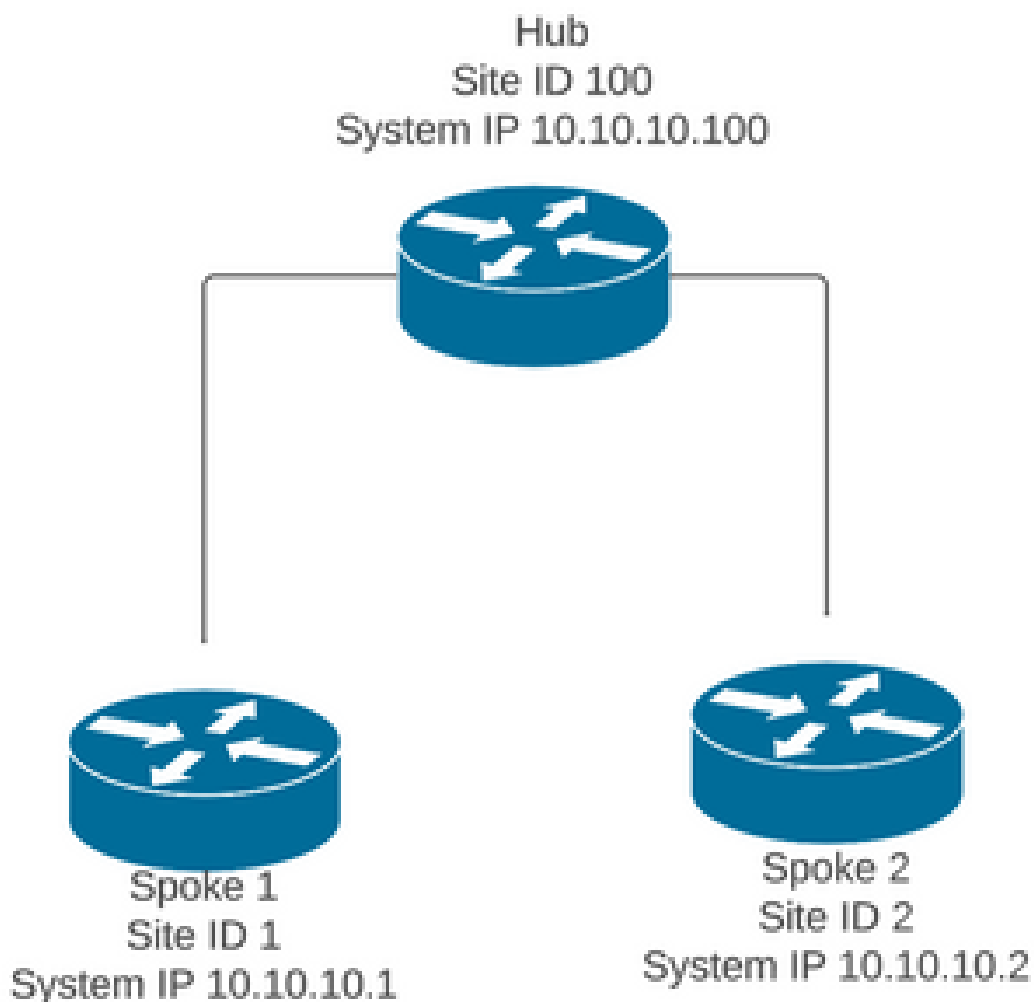
IDLE-TIMEOUT-EXPIRY(sec)

1 10.10.10.1

yes inactive

常见问题场景

使用的拓扑



场景1：备用路径通过分支视为无效和未解析的集线器

症状

- 无法访问Spoke 2中的目标前缀，可以看到来自集线器的备份路径，但将其视为无效/已卸载

<#root>

```
Spoke 1#show sdwan omp routes vpn 10 10.2.2.2/32
```

Code:

C -> chosen

I -> installed

Red -> redistributed

Rej -> rejected
 L -> looped
 R -> resolved
 S -> stale
 Ext -> extranet
 Inv -> invalid
 Stg -> staged
 IA -> On-demand inactive
 U -> TLOC unresolved
 BR-R -> border-router reoriginated
 TGW-R -> transport-gateway reoriginated

TENANT	VPN	PREFIX	FROM PEER	PATH ID	LABEL	STATUS	ATTRIBUTE TYPE	TLOC IP	COLOR	ENCAP	PREFERENC
0	10	10.2.2.2/32									
192.168.0.1	61	1005	Inv,U	installed	10.10.10.100	blue	ipsec	-	None	None	-
			192.168.0.1	62	1003	U,IA	installed	10.10.10.2	default	ipsec	-
192.168.0.1	64	1005	Inv,U	installed	10.10.10.100	blue	ipsec	-	None	None	-
			192.168.0.1	65	1003	U,IA	installed	10.10.10.2	private1	ipsec	-
192.168.0.1	67	1005	Inv,U	installed	10.10.10.100	blue	ipsec	-	None	None	-
			192.168.0.1	68	1003	U,IA	installed	10.10.10.2	private2	ipsec	-
192.168.0.2	71	1005	Inv,U	installed	10.10.10.100	blue	ipsec	-	None	None	-
			192.168.0.2	72	1003	U,IA	installed	10.10.10.2	default	ipsec	-
192.168.0.2	74	1005	Inv,U	installed	10.10.10.100	blue	ipsec	-	None	None	-
			192.168.0.2	75	1003	U,IA	installed	10.10.10.2	private1	ipsec	-
192.168.0.2	77	1005	Inv,U	installed	10.10.10.100	blue	ipsec	-	None	None	-
			192.168.0.2	78	1003	U,IA	installed	10.10.10.2	private2	ipsec	-

故障排除

1. 检查是否建立了指向分支的集线器BFD会话

<#root>

```
Hub#show sdwan bfd sessions
```

SYSTEM IP	SITE ID	STATE	SOURCE TLOC COLOR	REMOTE TLOC COLOR.	SOURCE IP	DST PUBLIC IP	DST PUBLIC PORT	ENCA
10.10.10.2	2	up	blue	blue	10.10.10.100	10.12.12.2	12366	ipse
10.10.10.1	1	up	default	default	10.10.10.100	10.11.11.1	12366	ipse

2. 检查按需隧道策略，确认所有站点根据其角色（中心或分支）包含在正确的站点列表中

3. 使用命令show sdwan system on-demand确认分支中按需功能是否已启用和处于活动状态

<#root>

```
Spoke 1#show sdwan system on-demand
```

```
SITE-ID SYSTEM-IP
```

```
ON-DEMAND STATUS
```

```
IDLE-TIMEOUT-CFG(min)
```

```
-----  
1      10.10.10.1
```

```
yes      active
```

```
10
```

```
Spoke 2#show sdwan system on-demand
```

```
SITE-ID SYSTEM-IP
```

```
ON-DEMAND STATUS
```

```
IDLE-TIMEOUT-CFG(min)
```

```
-----  
2      10.10.10.2
```

```
yes      active
```

```
10
```

4. 确认中心站点中是否启用了流量工程服务（服务TE）。有用的命令可以是show sdwan run | inc TE

<#root>

```
hub#show sdwan run | inc TE
```

!

解决方案

- 在这种情况下，中心站点中未启用服务TE。要修复，请在集线器端配置它：

```
<#root>
```

```
hub#config-trans
hub(config)# sdwan
hub(config-vrf-global)# service TE vrf global
hub(config-vrf-global)# commit
```

- 检查分支1中的OMP表是否已更改，现在将此路由作为来自中心10.10.10.100的条目的C、I、R（生成兴趣流量之前），并将来自分支2 10.10.10.2的条目获取C、I、R（生成兴趣流量时）。此外，使用命令show sdwan system on-demand remote-system <remote system ip>检查分支1和分支2以及按需隧道是否已启用BFD会话（如果适用）：

```
<#root>
```

```
Before interest traffic
```

```
Spoke 1#show sdwan omp routes vpn 10 10.2.2.2/32
```

```
Generating output, this might take time, please wait ...
```

```
Code:
```

```
C -> chosen
I -> installed
Red -> redistributed
Rej -> rejected
L -> looped
R -> resolved
S -> stale
Ext -> extranet
Inv -> invalid
Stg -> staged
IA -> On-demand inactive
U -> TL0C unresolved
BR-R -> border-router reoriginated
TGW-R -> transport-gateway reoriginated
```

```
AFFINITY
```

TENANT	VPN PREFIX	FROM PEER	PATH ID	STATUS	ATTRIBUTE GROUP	TLOC IP	COLOR	ENCAP PREFEREN
--------	------------	-----------	---------	--------	-----------------	---------	-------	----------------

```

0      10 10.2.2.2/32 192.168.0.1 61 1005 C,I,R    installed 10.10.10.100  blue  ipsec  -
      192.168.0.1 62 1003 I,U,IA    installed 10.10.10.2      default ipsec  -
      192.168.0.1 64 1005 C,R        installed 10.10.10.100     blue  ipsec  -
      192.168.0.1 65 1003 I,U,IA    installed 10.10.10.2      private1 ipsec  -
      192.168.0.1 67 1005 Inv,U     installed 10.10.10.100     blue  ipsec  -
      192.168.0.1 68 1003 I,U,IA    installed 10.10.10.2      private2 ipsec  -
      192.168.0.2 71 1005 C,R        installed 10.10.10.100     blue  ipsec  -
      192.168.0.2 72 1003 U,IA     installed 10.10.10.2      default ipsec  -
      192.168.0.2 74 1005 C,R        installed 10.10.10.100     blue  ipsec  -
      192.168.0.2 75 1003 U,IA     installed 10.10.10.2      private1 ipsec  -
      192.168.0.2 77 1005 Inv,U     installed 10.10.10.100     blue  ipsec  -
      192.168.0.2 78 1003 U,IA     installed 10.10.10.2      private2 ipsec  -

```

While interest traffic

Spoke 1#

```
show sdwan omp routes vpn 10 10.2.2.2/32
```

Generating output, this might take time, please wait ...

Code:

```

C -> chosen
I -> installed
Red -> redistributed
Rej -> rejected
L -> looped
R -> resolved
S -> stale
Ext -> extranet
Inv -> invalid
Stg -> staged
IA -> On-demand inactive
U -> TL0C unresolved
BR-R -> border-router reoriginated
TGW-R -> transport-gateway reoriginated

```

TENANT	VPN	PREFIX	FROM PEER	PATH ID LABEL	STATUS	ATTRIBUTE TYPE	TLOC IP	COLOR	ENCAP	PREFERENCE	AFFINITY GROUP NUMBER	REGI
0	10	10.2.2.2/32	192.168.0.1	61 1005 R	R	installed	10.10.10.100	blue			ipsec - None	
		192.168.0.1 62 1003	C,I,R	installed	10.10.10.2	default		ipsec	- None	None -		
		192.168.0.1 64 1005	R	installed	10.10.10.100			blue			ipsec - None	
		192.168.0.1 65 1003	C,I,R	installed	10.10.10.2	private1		ipsec	- None	None -		
		192.168.0.1 67 1005	Inv,U	installed	10.10.10.100			blue			ipsec - None	
		192.168.0.1 68 1003	C,I,R	installed	10.10.10.2	private2		ipsec	- None	None -		

```

192.168.0.2 71 1005 R      installed 10.10.10.100  blue      ipsec - None
192.168.0.2 72 1003 C,R   installed 10.10.10.2       default    ipsec - None
192.168.0.2 74 1005 R      installed 10.10.10.100  blue      ipsec - None
192.168.0.2 75 1003 C,R   installed 10.10.10.2       private1   ipsec - None
192.168.0.2 77 1005 Inv,U   installed 10.10.10.100  blue      ipsec - None
192.168.0.2 78 1003 C,R   installed 10.10.10.2       private2   ipsec - None

```

```
Spoke 1#show sdwan bfd sessions
```

SYSTEM IP	SITE ID	STATE	SOURCE TLOC COLOR	REMOTE TLOC COLOR	SOURCE IP	DST PUBLIC IP	DST PUBLIC PORT	PUBLIC ENCAP
10.10.10.100	100	up	blue	blue	10.10.10.1	10.100.100.1	12366	ipsec
10.10.10.2	2	up	default	default	10.10.10.1	10.12.12.2	12366	ipsec
10.10.10.2	2	up	blue	blue	10.10.10.1	10.12.12.2	12366	ipsec

```
Spoke 1#show sdwan system on-demand remote-system system-ip 10.10.10.2
```

```
SITE-ID SYSTEM-IP
```

```
ON-DEMAND STATUS
```

```
IDLE-TIMEOUT-EXPIRY(sec)
```

```

2      10.10.10.2 yes      active  41 ----->on-demand tunnel established to spoke 2 10.10.10.2 due of

```

场景2：分支之间的BFD会话保持开启

症状

- 在这种情况下，使用命令show sdwan system on-demand remote-system在按需远程终端中列出远程Spoke 2终端，其状态为no on-demand，即使没有发送感兴趣的流量且直接从Spoke 2获取目标前缀，Spoke 1和Spoke 2之间的BFD会话仍保持活动状态

```
<#root>
```

```
Spoke 1#show sdwan system on-demand remote-system
```

```
SITE-ID
```

```
SYSTEM-IP ON-DEMAND
```

```
STATUS IDLE-TIMEOUT-EXPIRY(sec)
```

```
-----
```

```
2
```

```
10.10.10.2 no
```

Spoke 1#show sdwan bfd sessions

SYSTEM IP	SITE ID	STATE	SOURCE TLOC COLOR	REMOTE TLOC COLOR	SOURCE IP	DST PUBLIC IP	DST PUBLIC PORT	DETECT ENCAP	TX MULTIPLIER
10.10.10.100	100	up	blue	blue	10.10.10.1	10.100.100.1	12366	ipsec 7	
10.10.10.2	2	up	default	default	10.10.10.1	10.12.12.2	12366	ipsec 7	
10.10.10.2	2	up	blue	blue	10.10.10.1	10.12.12.2	12366	ipsec 7	

Spoke 1#show sdwan omp route vpn 10 10.2.2.2/32

Generating output, this might take time, please wait ...

Code:

- C -> chosen
- I -> installed
- Red -> redistributed
- Rej -> rejected
- L -> looped
- R -> resolved
- S -> stale
- Ext -> extranet
- Inv -> invalid
- Stg -> staged
- IA -> On-demand inactive
- U -> TLOC unresolved
- BR-R -> border-router reoriginated
- TGW-R -> transport-gateway reoriginated

TENANT	VPN	PREFIX	FROM	PEER	PATH ID	STATUS	ATTRIBUTE TYPE	TLOC IP	COLOR	ENCAP	PREFEREN	
0	10	10.2.2.2/32	192.168.0.1	73	1005	R	installed	10.10.10.100	blue	ipsec	-	
192.168.0.1	74	1003	C,I,R	installed	10.10.10.2	default	ipsec	-	None	None	-	
				192.168.0.1	76	1005	R	installed	10.10.10.100	blue	ipsec	-
192.168.0.1	77	1003	C,I,R	installed	10.10.10.2	private1	ipsec	-	None	None	-	
				192.168.0.1	79	1005	Inv,U	installed	10.10.10.100	blue	ipsec	-
192.168.0.1	80	1003	C,I,R	installed	10.10.10.2	private2	ipsec	-	None	None	-	
				192.168.0.2	89	1005	R	installed	10.10.10.100	blue	ipsec	-
				192.168.0.2	90	1003	C,R	installed	10.10.10.2	default	ipsec	-
				192.168.0.2	92	1005	R	installed	10.10.10.100	blue	ipsec	-
				192.168.0.2	93	1003	C,R	installed	10.10.10.2	private1	ipsec	-
				192.168.0.2	95	1005	Inv,U	installed	10.10.10.100	blue	ipsec	-

故障排除

1. 检查按需隧道策略，确认所有站点根据其角色（中心或分支）包含在正确的站点列表中

```
viptela-policy:policy
  control-policy ondemand
    sequence 1
      match route
        site-list Spokes
        prefix-list _AnyIpv4PrefixList
      !
      action accept
      set
        tloc-action backup
        tloc-list hub
      !
    !
  !
  default-action accept
  !
  lists
    site-list Spokes
      site-id 1-2
    !
    tloc-list hub
      tloc 10.10.10.100 color blue encap ipsec
      tloc 10.10.10.100 color default encap ipsec
      tloc 10.10.10.100 color private1 encap ipsec
      tloc 10.10.10.100 color private2 encap ipsec
    !
    prefix-list _AnyIpv4PrefixList
      ip-prefix 0.0.0.0/0 le 32
    !
  !
  !
  apply-policy
    site-list Spokes
      control-policy ondemand out
    !
  !
```

2. 使用show sdwan run命令检查按需是否启用 | inc在辐条中按需提供，而中心站点中已使用show sdwan run命令启用TE | inc TE

<#root>

```
Spoke 1#show sdwan run | inc on-demand
```

```
on-demand enable
on-demand idle-timeout 10
```

```
Spoke 2#show sdwan run | inc on-demand
Spoke 2#
```

```
Hub#show sdwan run | inc TE
service TE vrf global
```

解决方案

- 在这种情况下，在Spoke 2中未启用按需。若要修复，请在Spoke 2端配置它

```
<#root>
```

```
Spoke 2#config-trans
Spoke 2(config)# system

Spoke 2(config-vrf-global)# on-demand enable
Spoke 2(config-vrf-global)# on-demand idle-timeout 10

Spoke 2(config-vrf-global)# commit
```

- 检查分支1中现在分支2是否被视为按需是，且OMP表已更改，并且现在对于来自中心10.10.10.100的条目（生成兴趣流量之前）而不是直接来自分支2的条目，此路由为C、I、R

```
<#root>
```

```
Spoke 1#show sdwan system on-demand remote-system
SITE-ID SYSTEM-IP ON-DEMAND STATUS IDLE-TIMEOUT-EXPIRY(sec)
-----
2      10.10.10.2 yes inactive -
```

```
Spoke 1#show sdwan omp routes vpn 10 10.2.2.2/32

Generating output, this might take time, please wait ...
Code:
C -> chosen
I -> installed
Red -> redistributed
Rej -> rejected
L -> looped
R -> resolved
S -> stale
Ext -> extranet
Inv -> invalid
Stg -> staged
IA -> On-demand inactive
U -> TLLOC unresolved
```


BR-R -> border-router reoriginated
 TGW-R -> transport-gateway reoriginated

AFFINITY

TENANT	VPN	PREFIX	FROM PEER	ID	LABEL	STATUS	TYPE	TLOC IP	COLOR	ENCAP	PREFERENCE
0	10	10.2.2.2/32	192.168.0.1	61	1005	C,I,R	installed	10.10.10.100	blue	ipsec	-
			192.168.0.1	62	1003	I,U,IA	installed	10.10.10.2	default	ipsec	-
			192.168.0.1	64	1005	C,R	installed	10.10.10.100	blue	ipsec	-
			192.168.0.1	65	1003	I,U,IA	installed	10.10.10.2	private1	ipsec	-
			192.168.0.1	67	1005	Inv,U	installed	10.10.10.100	blue	ipsec	-
			192.168.0.1	68	1003	I,U,IA	installed	10.10.10.2	private2	ipsec	-
			192.168.0.2	71	1005	C,R	installed	10.10.10.100	blue	ipsec	-
			192.168.0.2	72	1003	U,IA	installed	10.10.10.2	default	ipsec	-
			192.168.0.2	74	1005	C,R	installed	10.10.10.100	blue	ipsec	-
			192.168.0.2	75	1003	U,IA	installed	10.10.10.2	private1	ipsec	-
			192.168.0.2	77	1005	Inv,U	installed	10.10.10.100	blue	ipsec	-
			192.168.0.2	78	1003	U,IA	installed	10.10.10.2	private2	ipsec	-

- 当生成兴趣流量时，来自分支2 10.10.10.2的条目的流量将获得C、I、R。此外，使用命令 show sdwan system on-demand remote-system <remote system ip>检查按需隧道是否已启用，并检查Spoke 1和Spoke 2之间的BFD会话是否已启用

<#root>

Spoke 1#

show sdwan omp routes vpn 10 10.2.2.2/32

Generating output, this might take time, please wait ...

Code:

C -> chosen
 I -> installed
 Red -> redistributed
 Rej -> rejected
 L -> looped
 R -> resolved
 S -> stale
 Ext -> extranet
 Inv -> invalid
 Stg -> staged
 IA -> On-demand inactive
 U -> TLOC unresolved
 BR-R -> border-router reoriginated
 TGW-R -> transport-gateway reoriginated

TENANT	VPN	PREFIX	FROM PEER	PATH ID	PATH LABEL	STATUS	ATTRIBUTE TYPE	TLOC IP	COLOR	ENCAP	PRE
0	10	10.2.2.2/32	192.168.0.1	61	1005	R	installed	10.10.10.100	blue	ipsec	
			192.168.0.1	62	1003	C,I,R	installed	10.10.10.2	default	ipsec	

```

192.168.0.1 64 1005 R          installed 10.10.10.100 blue ipsec
192.168.0.1 65 1003 C,I,R     installed 10.10.10.2  private1 ipsec
192.168.0.1 67 1005 Inv,U     installed 10.10.10.100 blue ipsec
192.168.0.1 68 1003 C,I,R     installed 10.10.10.2  private2 ipsec

192.168.0.2 71 1005 R          installed 10.10.10.100 blue ipsec
192.168.0.2 72 1003 C,R       installed 10.10.10.2  default ipsec
192.168.0.2 74 1005 R          installed 10.10.10.100 blue ipsec
192.168.0.2 75 1003 C,R       installed 10.10.10.2  private1 ipsec
192.168.0.2 77 1005 Inv,U     installed 10.10.10.100 blue ipsec
192.168.0.2 78 1003 C,R       installed 10.10.10.2  private2 ipsec

```

Spoke 1#show sdwan bfd sessions

SYSTEM IP	SITE ID	STATE	SOURCE TLOC COLOR	REMOTE TLOC COLOR	SOURCE IP	DST PUBLIC IP	DST PUBLIC PORT	ENCAP	DETECT MULTIPLIER	...
10.10.10.100	100	up	blue	blue	10.10.10.1	10.100.100.1	12366	ipsec	7	...
10.10.10.2	2	up	default	default	10.10.10.1	10.12.12.2	12366	ipsec	7	...
10.10.10.2	2	up	blue	blue	10.10.10.1	10.12.12.2	12366	ipsec	7	...

Spoke 1#show sdwan system on-demand remote-system system-ip 10.10.10.2

SITE-ID SYSTEM-IP

ON-DEMAND STATUS

IDLE-TIMEOUT-EXPIRY(sec)

```

-----
2          10.10.10.2 yes          active  41 ----->on-demand tunnel established to Spoke 2 10.10.10.2 due c

```

场景3：分支中没有从集线器获取或安装的备份路由

症状

- 在这种情况下，在OMP表中，没有源自Spoke 2的前缀10.2.2.2/32的备份路由，只能看到按需非活动条目。已确认已配置分支中的按需连接和集线器中的TE

<#root>

Spoke 1#show sdwan omp route vpn 10 10.2.2.2/32

Generating output, this might take time, please wait ...

Code:

- C -> chosen
- I -> installed
- Red -> redistributed
- Rej -> rejected
- L -> looped
- R -> resolved
- S -> stale
- Ext -> extranet
- Inv -> invalid
- Stg -> staged
- IA -> On-demand inactive
- U -> TLOC unresolved
- BR-R -> border-router reoriginated
- TGW-R -> transport-gateway reoriginated

AFFINITY

PATH	ATTRIBUTE	GROUP	TENANT	VPN	PREFIX	FROM PEER	ID	LABEL	STATUS	TYPE	TLOC IP	COLOR	ENCAP	PREFERENCE	NUMB
0			10		10.2.2.2/32	192.168.0.1	108	1003							
U,IA															
	installed		10.10.10.2	default	ipsec -	192.168.0.1	113	1003	None	None	-				
U,IA															
	installed		10.10.10.2	private1	ipsec -	192.168.0.1	141	1003	None	None	-				
U,IA															
	installed		10.10.10.2	private2	ipsec -	192.168.0.2	112	1003	None	None	-				
U,IA															
	installed		10.10.10.2	default	ipsec -	192.168.0.2	117	1003	None	None	-				
U,IA															
	installed		10.10.10.2	private1	ipsec -	192.168.0.2	144	1003	None	None	-				
U,IA															
	installed		10.10.10.2	private2	ipsec -				None	None	-				

```
Spoke 1#show sdwan run | inc on-demand
on-demand enable
on-demand idle-timeout 10
```

```
Spoke 2#show sdwan run | inc on-demand
on-demand enable
on-demand idle-timeout 10
```

```
Hub#show sdwan run | inc TE
service TE vrf global
```

故障排除

- 检查按需集中策略，并确认所有分支是否都包含在正确的站点列表中

```
<#root>
viptela-policy:policy
  control-policy ondemand
    sequence 1
      match route
        site-list Spokes
        prefix-list _AnyIpv4PrefixList
      !
      action accept
      set
        tloc-action backup
        tloc-list hub
      !
      !
      !
      default-action accept
    !
  lists

  site-list Spokes
    site-id 1

    !
    tloc-list hub
      tloc 10.10.10.100 color blue encap ipsec
      tloc 10.10.10.100 color default encap ipsec
      tloc 10.10.10.100 color private1 encap ipsec
      tloc 10.10.10.100 color private2 encap ipsec
    !
    prefix-list _AnyIpv4PrefixList
      ip-prefix 0.0.0.0/0 le 32
    !
    !
    !
  apply-policy
    site-list Spokes
    control-policy ondemand out
  !
```

解决方案

- 请注意，策略中的站点列表分支中缺少Spoke 2 site id 2。将其包含在站点列表中后，备份路径安装正确，当发送相关流量时，会启动按需隧道和分支之间的BFD会话。

<#root>

Spokes site list from policy before

lists

site-list Spokes

site-id 1

!

Spokes site list from policy after

lists

site-list Spokes

site-id 1-2

!

Spoke 1#show sdwan omp routes vpn 10 10.2.2.2/32

Generating output, this might take time, please wait ...

Code:

C -> chosen

I -> installed

Red -> redistributed

Rej -> rejected

L -> looped

R -> resolved

S -> stale

Ext -> extranet

Inv -> invalid

Stg -> staged

IA -> On-demand inactive

U -> TLOC unresolved

BR-R -> border-router reoriginated

TGW-R -> transport-gateway reoriginated

AFFINITY

PATH ATTRIBUTE GROUP

TENANT VPN PREFIX FROM PEER ID LABEL STATUS TYPE TLOC IP COLOR ENCAP PREFERENC

0	10	10.2.2.2/32	192.168.0.1	61	1005	C,I,R	installed	10.10.10.100	blue	ipsec	-
			192.168.0.1	62	1003	I,U,IA	installed	10.10.10.2	default	ipsec	-
			192.168.0.1	64	1005	C,R	installed	10.10.10.100	blue	ipsec	-
			192.168.0.1	65	1003	I,U,IA	installed	10.10.10.2	private1	ipsec	-

```

192.168.0.1 67 1005 Inv,U installed 10.10.10.100 blue ipsec -
192.168.0.1 68 1003 I,U,IA installed 10.10.10.2 private2 ipsec -
192.168.0.2 71 1005 C,R installed 10.10.10.100 blue ipsec -
192.168.0.2 72 1003 U,IA installed 10.10.10.2 default ipsec -
192.168.0.2 74 1005 C,R installed 10.10.10.100 blue ipsec -
192.168.0.2 75 1003 U,IA installed 10.10.10.2 private1 ipsec -
192.168.0.2 77 1005 Inv,U installed 10.10.10.100 blue ipsec -
192.168.0.2 78 1003 U,IA installed 10.10.10.2 private2 ipsec -

```

Spoke 1#show sdwan bfd sessions

SOURCE SYSTEM IP	SITE ID	STATE	TLOC REMOTE COLOR	TLOC DST COLOR	PUBLIC SOURCE IP	DST PUBLIC IP	PORT	ENCAP	DETECT MULTIPLIER	TX INTERVAL
10.10.10.100	100	up	blue	blue	10.10.10.1	10.100.100.1	12366	ipsec	7	1000
10.10.10.2	2	up	default	default	10.10.10.1	10.12.12.2	12366	ipsec	7	1000
10.10.10.2	2	up	blue	blue	10.10.10.1	10.12.12.2	12366	ipsec	7	1000

Spoke 1#show sdwan system on-demand remote-system system-ip 10.10.10.2

SITE-ID SYSTEM-IP

ON-DEMAND STATUS

IDLE-TIMEOUT-EXPIRY(sec)

```

2      10.10.10.2 yes      active      56 ----->on-demand tunnel established to Spoke 2 10.10.10.2 due c

```

有用的命令

- show sdwan system on-demand
- show sdwan system on-demand remote-system
- show sdwan system on-demand remote-system system-ip <system ip>
- show sdwan run | inc 按需
- show sdwan run | inc TE
- show sdwan ompo routes vpn <vpn number>

关于此翻译

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