

在Pseudowire头端的IPoE会话在宽带网络网关(BNG)

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简介

本文描述步骤配置在以太网(IPoE)会话的IP在ASR9K的Pseudowire头端。

先决条件

要求

Cisco 建议您了解以下主题：

- MPLS Layer2 VPN
- 在ASR9K的BNG功能

提示：参考[Cisco ASR 9000系列](#) Cisco条款的[宽带网络网关配置指南](#)为了获取与BNG功能的熟悉。

提示：参考[MPLS第2层VPN配置指南](#) Cisco条款为了获取与MPLS第2层VPN的熟悉。

使用的组件

本文没有限制对特定软件版本，但是我们在ASR9K使用的线卡是A9K-MPA-20X1GE。

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

BNG提供在Pseudowire头端(PWHE)的用户支持。PWHE提供L3连接给用户边缘节点通过pseudowire连接。存在访问提供边缘的PWHE中断L2VPN电路(猿)节点之间，对虚拟接口，并且执行在本地IP信息包的路由。每个虚拟接口能使用往访问网云的一个或更多物理接口通过猿节点到达客户路由器。

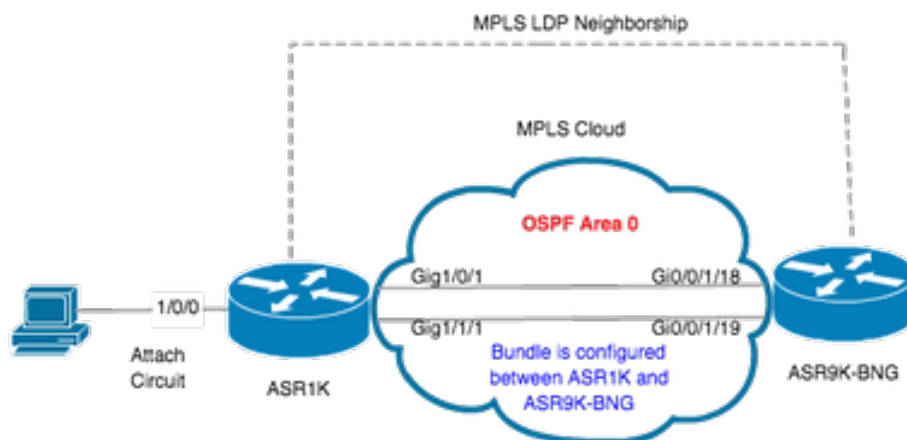
注意：此功能为PPPoE在PWHE的PTA，PPPoE LAC用户和IPoE用户支持。

网络图

对于此测试与版本154-3.S2的一个ASR1K被使用和与版本IOS-XR 5.2.2的ASR9K。OSPF用于作为路由协议互相到达环回地址。

ASR9K环回地址：5.5.5.5/32

ASR1K环回地址：6.6.6.6/32



配置ASR1K

```
pseudowire-class MPLS
encapsulation mpls
```

```
interface GigabitEthernet1/0/0 no ip address media-type rj45 negotiation auto cdp enable
xconnect 5.5.5.5 2020 encapsulation mpls pw-class MPLS end ASR1K#show etherchannel summary
```

```
Flags:  D - down          P/bndl - bundled in port-channel
        I - stand-alone  s/susp - suspended
        H - Hot-standby (LACP only)
        R - Layer3       S - Layer2
        U - in use       f - failed to allocate aggregator
```

```
M - not in use, minimum links not met
u - unsuitable for bundling
w - waiting to be aggregated
d - default port
```

```
Number of channel-groups in use: 1
Number of aggregators:          1
```

```
Group  Port-channel  Protocol  Ports
-----+-----+-----+-----
20Po20(RU)LACP Gi1/0/1(bndl) Gi1/1/1(bndl)
```

```
RU - L3 port-channel UP State
SU - L2 port-channel UP state
P/bndl - Bundled
S/susp - Suspended
```

```
interface Port-channel20
ip address 20.20.20.2 255.255.255.0
no negotiation auto
mpls ip
end
```

配置ASR9K

这是从ASR9K的配置，作为BNG PWHE。

```
ASR1K#show etherchannel summary
```

```
Flags:  D - down          P/bndl - bundled in port-channel
        I - stand-alone  s/susp - suspended
        H - Hot-standby (LACP only)
        R - Layer3       S - Layer2
        U - in use       f - failed to allocate aggregator
```

```
M - not in use, minimum links not met
u - unsuitable for bundling
w - waiting to be aggregated
d - default port
```

```
Number of channel-groups in use: 1
Number of aggregators:          1
```

```
Group  Port-channel  Protocol  Ports
-----+-----+-----+-----
20Po20(RU)LACP Gi1/0/1(bndl) Gi1/1/1(bndl)
```

```
RU - L3 port-channel UP State
```

SU - L2 port-channel UP state
P/bndl - Bundled
S/susp - Suspended

```
interface Port-channel20
ip address 20.20.20.2 255.255.255.0
no negotiation auto
mpls ip
end
```

现在请配置在ASR1K和ASR9K之间的xconnect。指定环回地址ASR1K (6.6.6.6/32)作为xconnect邻居。

```
l2vpn router-id 5.5.5.5 pw-class ASR1K encapsulation mpls transport-mode ethernet !! xconnect group PWHE p2p ASR1K
interface PW-Ether20 neighbor ipv4 6.6.6.6 pw-id 2020
    pw-class ASR1K
    !
    !
    !
generic-interface-list BE20_ONLY
interface Bundle-Ether20
interface GigabitEthernet0/0/1/18
interface GigabitEthernet0/0/1/19
!
```

```
interface PW-Ether20
ipv4 address 173.1.1.1 255.255.255.0
attach generic-interface-list BE20_ONLY
!
```

现在请配置用户控制策略并且应用在用户终止的PW以太网接口。

```
dynamic-template
type ipsubscriber WDAAR_PWHE_DT
    ipv4 verify unicast source reachable-via rx
    ipv4 unnumbered Loopback44
    ipv4 unreachable disable
    !
    !
```

```
policy-map type control subscriber IPoE_WDAAR_PWHE
event session-start match-first
class type control subscriber DHCPv4 do-until-failure
    5 authorize aaa list WDAAR identifier source-address-mac password cisco
    10 activate dynamic-template WDAAR_PWHE_DT
    !
    !
end-policy-map
```

```
interface PW-Ether20.250
ipv4 address 178.1.1.1 255.255.255.252
service-policy type control subscriber IPoE_WDAAR_PWHE
encapsulation dot1q 250
ipsubscriber ipv4 l2-connected
    initiator dhcp
    !
    !
```

验证

此部分提供您能使用为了验证的信息您的配置适当地工作。下面您能使用验证的命令xconnect是UP/UP在ASR9K。

RP/0/RSP0/CPU0:ACDC-ASR9000-1#show l2vpn xconnect

Legend: ST = State, UP = Up, DN = Down, AD = Admin Down, UR = Unresolved,
SB = Standby, SR = Standby Ready, (PP) = Partially Programmed

XConnect		Segment 1		Segment 2		
Group	Name	ST	Description	ST	Description	ST
PWHE	ASR1K	UP	PE20	UP	6.6.6.6	2020 UP

RP/0/RSP0/CPU0:ACDC-ASR9000-1#show l2vpn xconnect brief

AToM

Like-to-Like	UP	DOWN	UNR
PW-Ether	1	0	0
Total	1	0	0
Total	1	0	0

Total: 1 UP, 0 DOWN, 0 UNRESOLVED

RP/0/RSP0/CPU0:ACDC-ASR9000-1#show subscriber session filter ipv4-address 44.44.44.254

Codes: IN - Initialize, CN - Connecting, CD - Connected, AC - Activated,
ID - Idle, DN - Disconnecting, ED - End

Type	Interface	State	IP Address (Vrf)
------	-----------	-------	------------------

IP:DHCP PE20.250.ip1 AC 44.44.44.254 (default)

一旦xconnect上，并且IPoE会话来联机在您能下面看到的ASR9K访问接口是PW以太。

RP/0/RSP0/CPU0:ACDC-ASR9000-1#show subscriber session filter ipv4-address 44.44.44.254 detail

Interface: PW-Ether20.250.ip1
Circuit ID: Unknown
Remote ID: Unknown
Type: IP: **DHCP-trigger**
IPv4 State: Up, Mon Apr 20 19:32:51 2015
IPv4 Address: **44.44.44.254**, VRF: default
Mac Address: 001f.ca3f.7924
Account-Session Id: 00000068
Nas-Port: Unknown
User name: 001f.ca3f.7924
Formatted User name: unknown
Client User name: unknown
Outer VLAN ID: 250
Subscriber Label: 0x000001db
Created: Mon Apr 20 19:32:49 2015
State: Activated
Authentication: unauthenticated
Authorization: authorized
Access-interface: PW-Ether20.250 Policy Executed:
policy-map type control subscriber IPoE_WDAAR_PWHE
event Session-Start match-first [at Mon Apr 20 19:32:49 2015]
class type control subscriber DHCPv4 do-until-failure [Succeeded]
5 authorize aaa list WDAAR [Succeeded]
10 activate dynamic-template WDAAR_PWHE_DT [Succeeded]

Session Accounting: disabled

Last COA request received: unavailable

现在请验证BNG用户第3层连通性在PWHE的。

RP/0/RSP0/CPU0:ACDC-ASR9000-1#show subscriber session filter ipv4-address 44.44.44.254 detail

Interface: PW-Ether20.250.ip1
Circuit ID: Unknown
Remote ID: Unknown

```
Type: IP: DHCP-trigger
IPv4 State: Up, Mon Apr 20 19:32:51 2015
IPv4 Address: 44.44.44.254, VRF: default
Mac Address: 001f.ca3f.7924
Account-Session Id: 00000068
Nas-Port: Unknown
User name: 001f.ca3f.7924
Formatted User name: unknown
Client User name: unknown
Outer VLAN ID: 250
Subscriber Label: 0x000001db
Created: Mon Apr 20 19:32:49 2015
State: Activated
Authentication: unauthenticated
Authorization: authorized
Access-interface: PW-Ether20.250 Policy Executed:
policy-map type control subscriber IPoE_WDAAR_PWHE
  event Session-Start match-first [at Mon Apr 20 19:32:49 2015]
  class type control subscriber DHCPv4 do-until-failure [Succeeded]
    5 authorize aaa list WDAAR [Succeeded]
    10 activate dynamic-template WDAAR_PWHE_DT [Succeeded]
Session Accounting: disabled
Last COA request received: unavailable
```

排除故障PWHE

此部分提供您能使用为了排除故障您的配置和验证在ASR9K的xconnect状态的信息。

命令验证ASR9K配置

这些命令可以用于验证配置是正确在ASR9K。

- show running-configuration l2vpn
- show running-configuration int PW-Ether<Interface-Number>
- show running-configuration mpls LDP
- show running-configuration通用的接口列表

检查L2VPN XC

检查xconnect。xconnect (并且AC和PW)必须是UP。您能使用这些命令验证状态。

- 显示l2vpn xconnect摘要

```
RP/0/RSP0/CPU0:ACDC-ASR9000-1#show l2vpn xconnect summary
Thu May 21 05:40:05.068 UTC
Number of groups: 1
Number of xconnects: 1
  Up: 1 Down: 0 Unresolved: 0 Partially-programmed: 0
  AC-PW: 1 AC-AC: 0 PW-PW: 0 Monitor-Session-PW: 0
Number of Admin Down segments: 0
Number of MP2MP xconnects: 0
  Up 0 Down 0
  Advertised: 0 Non-Advertised: 0
Number of CE Connections: 0
  Advertised: 0 Non-Advertised: 0
Backup PW:
  Configured : 0
  UP : 0
```

Down : 0
Admin Down : 0
Unresolved : 0
Standby : 0
Standby Ready: 0

Backup Interface:

Configured : 0
UP : 0
Down : 0
Admin Down : 0
Unresolved : 0
Standby : 0

RP/0/RSP0/CPU0:ACDC-ASR9000-1#show l2vpn xconnect summary

Thu May 21 05:40:05.068 UTC

Number of groups: 1

Number of xconnects: 1

Up: 1 Down: 0 Unresolved: 0 Partially-programmed: 0

AC-PW: 1 AC-AC: 0 PW-PW: 0 Monitor-Session-PW: 0

Number of Admin Down segments: 0

Number of MP2MP xconnects: 0

Up 0 Down 0

Advertised: 0 Non-Advertised: 0

Number of CE Connections: 0

Advertised: 0 Non-Advertised: 0

Backup PW:

Configured : 0
UP : 0
Down : 0
Admin Down : 0
Unresolved : 0
Standby : 0
Standby Ready: 0

Backup Interface:

Configured : 0
UP : 0
Down : 0
Admin Down : 0
Unresolved : 0
Standby : 0

RP/0/RSP0/CPU0:ACDC-ASR9000-1#show l2vpn xconnect interface pw-eth20 detail

Thu May 21 05:40:55.789 UTC

Group PWHE, XC ASR1K, state is up; Interworking none

AC: PW-Ether20, state is up

Type PW-Ether

Interface-list: **BE20_ONLY**

Replicate status:

BE20: success

Gi0/0/1/18: success

Gi0/0/1/19: success

MTU 1500; interworking none

Internal label: 16001

Statistics:

packets: received 52970, sent 0

bytes: received 3485714, sent 0

PW: neighbor 6.6.6.6, PW ID 2020, state is up (established)

PW class asr1k, XC ID 0xc0000001

Encapsulation MPLS, protocol LDP

Source address 5.5.5.5

PW type Ethernet, control word disabled, interworking none

PW backup disable delay 0 sec

Sequencing not set

PW Status TLV in use

```

MPLS          Local                               Remote
-----
Label         16002                                         17
Group ID      0x920                                         unknown
Interface     PW-Ether20                                    unknown
MTU           1500                                         1500
Control word  disabled                                    disabled
PW type       Ethernet                                    Ethernet
VCCV CV type  0x2                                         0x2
              (LSP ping verification)                 (LSP ping verification)
VCCV CC type  0x6                                         0x6
              (router alert label)                   (router alert label)
              (TTL expiry)                       (TTL expiry)
-----
Incoming Status (PW Status TLV):
  Status code: 0x0 (Up) in Notification message
Outgoing Status (PW Status TLV):
  Status code: 0x0 (Up) in Notification message
MIB cpwVcIndex: 3221225473
Create time: 21/05/2015 02:52:43 (02:48:12 ago)
Last time status changed: 21/05/2015 05:21:17 (00:19:38 ago)
Last time PW went down: 21/05/2015 03:10:45 (02:30:10 ago)
Statistics:
  packets: received 52970, sent 0
  bytes: received 3485714, sent 0

```

检查接口列表

显示PW-HE使用的接口列表：它应该存在和有适当的接口。

- 显示通用的接口列表命名<NAME>

```

RP/0/RSP0/CPU0:ACDC-ASR9000-1#show l2vpn xconnect interface pw-eth20 detail
Thu May 21 05:40:55.789 UTC

```

```

Group PWHE, XC ASR1K, state is up; Interworking none
AC: PW-Ether20, state is up
  Type PW-Ether
  Interface-list: BE20_ONLY
  Replicate status:
  BE20: success
  Gi0/0/1/18: success
  Gi0/0/1/19: success
  MTU 1500; interworking none
  Internal label: 16001
Statistics:
  packets: received 52970, sent 0
  bytes: received 3485714, sent 0
PW: neighbor 6.6.6.6, PW ID 2020, state is up ( established )
  PW class asr1k, XC ID 0xc0000001
  Encapsulation MPLS, protocol LDP
  Source address 5.5.5.5
  PW type Ethernet, control word disabled, interworking none
  PW backup disable delay 0 sec
  Sequencing not set

```

```

PW Status TLV in use
MPLS          Local                               Remote
-----
Label         16002                                         17
Group ID      0x920                                         unknown
Interface     PW-Ether20                                    unknown
MTU           1500                                         1500

```



```

Control word disabled          disabled
PW type      Ethernet         Ethernet
VCCV CV type 0x2              0x2
                (LSP ping verification)    (LSP ping verification)
VCCV CC type 0x6              0x6
                (router alert label)        (router alert label)
                (TTL expiry)                (TTL expiry)
-----

```

```

Incoming Status (PW Status TLV):
  Status code: 0x0 (Up) in Notification message
Outgoing Status (PW Status TLV):
  Status code: 0x0 (Up) in Notification message
MIB cpwVcIndex: 3221225473
Create time: 21/05/2015 02:52:43 (02:48:12 ago)
Last time status changed: 21/05/2015 05:21:17 (00:19:38 ago)
Last time PW went down: 21/05/2015 03:10:45 (02:30:10 ago)
Statistics:
  packets: received 52970, sent 0
  bytes: received 3485714, sent 0

```

检查接口列表使用的PW-HE

下面私有的输出指示哪些成员接口是“活跃”即哪个下载对FIB。

- 显示I2vpn通用的接口列表名称<NAME>
- 显示私有I2vpn的通用的接口列表

```

RP/0/RSP0/CPU0:ACDC-ASR9000-1#show l2vpn xconnect interface pw-eth20 detail
Thu May 21 05:40:55.789 UTC

```

```

Group PWHE, XC ASR1K, state is up; Interworking none
AC: PW-Ether20, state is up
  Type PW-Ether
  Interface-list: BE20_ONLY
  Replicate status:
  BE20: success
  Gi0/0/1/18: success
  Gi0/0/1/19: success
  MTU 1500; interworking none
  Internal label: 16001
Statistics:
  packets: received 52970, sent 0
  bytes: received 3485714, sent 0
PW: neighbor 6.6.6.6, PW ID 2020, state is up ( established )
  PW class asr1k, XC ID 0xc0000001
  Encapsulation MPLS, protocol LDP
  Source address 5.5.5.5
  PW type Ethernet, control word disabled, interworking none
  PW backup disable delay 0 sec
  Sequencing not set

```

```

PW Status TLV in use
MPLS      Local          Remote
-----
Label     16002                 17
Group ID  0x920                 unknown
Interface PW-Ether20      unknown
MTU       1500                  1500
Control word disabled    disabled
PW type   Ethernet            Ethernet
VCCV CV type 0x2              0x2
                (LSP ping verification)    (LSP ping verification)

```

```

VCCV CC type 0x6                                0x6
            (router alert label)                (router alert label)
            (TTL expiry)                        (TTL expiry)
-----

```

```

Incoming Status (PW Status TLV):
  Status code: 0x0 (Up) in Notification message
Outgoing Status (PW Status TLV):
  Status code: 0x0 (Up) in Notification message
MIB cpwVcIndex: 3221225473
Create time: 21/05/2015 02:52:43 (02:48:12 ago)
Last time status changed: 21/05/2015 05:21:17 (00:19:38 ago)
Last time PW went down: 21/05/2015 03:10:45 (02:30:10 ago)
Statistics:
  packets: received 52970, sent 0
  bytes: received 3485714, sent 0

```

检查MA有与正确信息的PW-HE

接口列表信息、CW，VC类型等，在MA必须适当地设置。

```

RP/0/RSP0/CPU0:ACDC-ASR9000-1#show l2vpn ma pwhe interface PW-Ether 20 private
Thu May 21 05:36:28.170 UTC
Interface: PW-Ether20   Interface State: Up, Admin state: Up
  Interface handle 0x920
MTU: 1514
  BW: 10000 Kbit
  Interface MAC addresses (1 address):
    10f3.1172.02c5
  IDB is not in Replicate Linked List
  IDB is not in Create Linked List
  IDB is not in Attr Linked List
  Opaque flags: 0xe
  Flags: 0x3c
    Valid : IFH, MTU, MAC, BW
  MA trace history [Num events: 32]

```

```

-----
Time          Event          Value          Sticky Many
====          =====          =====
05/21/2015 02:56:05 Remove retry list 0x3           No      No
05/21/2015 02:56:05 IDB Set flag      0x3c          No      No
05/21/2015 03:08:26 IDB Set State     0x1           No      No
05/21/2015 03:08:26 IM publish attr  0x45          No      No
05/21/2015 03:08:26 IM update init-data 0x1e         No      No
05/21/2015 03:08:26 IDB Set flag      0x3c          No      No
05/21/2015 03:08:26 Remove retry list 0x3           No      No
05/21/2015 03:08:26 IDB Set flag      0x3c          No      No
05/21/2015 03:09:54 IDB Set State     0             No      No
05/21/2015 03:09:54 IM publish attr  0x45          No      No
05/21/2015 03:09:54 IM publish attr  0x52          No      No
05/21/2015 03:09:54 IM update init-data 0x1e         No      No
05/21/2015 03:09:54 IDB Set flag      0x3c          No      No
05/21/2015 03:09:54 Remove retry list 0x3           No      No
05/21/2015 03:09:54 IDB Set flag      0x3c          No      No
05/21/2015 03:09:54 Remove retry list 0x3           No      No
05/21/2015 03:09:54 IDB Set flag      0x3c          No      No
05/21/2015 03:10:45 IDB Set State     0x1           No      No
05/21/2015 03:10:45 IM publish attr  0x45          No      No
05/21/2015 03:10:45 IM update init-data 0x1e         No      No
05/21/2015 03:10:45 IDB Set flag      0x3c          No      No
05/21/2015 03:10:45 Remove retry list 0x3           No      No
05/21/2015 03:10:45 IDB Set flag      0x3c          No      No
05/21/2015 05:21:17 IDB Set State     0             No      No
05/21/2015 05:21:17 IM publish attr  0x45          No      No

```

05/21/2015	05:21:17	IM publish attr	0x52	No	No
05/21/2015	05:21:17	IM update init-data	0x1e	No	No
05/21/2015	05:21:17	IDB Set flag	0x3c	No	No
05/21/2015	05:21:17	Remove retry list	0x3	No	No
05/21/2015	05:21:17	IDB Set flag	0x3c	No	No
05/21/2015	05:21:17	Remove retry list	0x3	No	No
05/21/2015	05:21:17	IDB Set flag	0x3c	No	No

CLIENT MA trace history [Num events: 27]

```

-----
Time          Event          Value          Sticky Many
====          =====          =====
05/21/2015 02:54:01 IM Notify Up    0x50049e10    No      No
05/21/2015 02:54:01 FSM state change 0x200         No      No
05/21/2015 02:54:01 FSM state change 0x2030d      No      No
05/21/2015 02:54:02 Double restart detected 0x5         No      No
05/21/2015 02:55:00 I/f created/added 0x4000540    No      No
05/21/2015 02:55:00 I/f created/added 0x4000580    No      No
05/21/2015 02:55:00 I/f created/added 0x4000540    No      No
05/21/2015 02:55:00 I/f created/added 0x4000580    No      No
05/21/2015 02:55:00 Intf list change 0x3000300    No      No
05/21/2015 02:55:00 Intf add error 0x4000540    No      No
05/21/2015 02:55:00 Intf add error 0x4000580    No      No
05/21/2015 02:55:00 FSM state change 0x30505      No      No
05/21/2015 02:55:01 Replicate result 0x13fe       No      No
05/21/2015 02:55:01 FSM state change 0x5060b      No      No
05/21/2015 02:55:01 I/f up 0x4000580    No      No
05/21/2015 02:55:01 I/f up 0x4000580    No      No
05/21/2015 02:55:02 I/f up 0x4000540    No      No
05/21/2015 02:55:02 I/f up 0x4000540    No      No
05/21/2015 02:56:05 Added to peer 0x6060606    No      No
05/21/2015 02:56:05 FSM state change 0x60704      No      No
05/21/2015 02:56:05 Fill VIMI attr 0x20002      No      No
05/21/2015 03:08:26 FSM state change 0x70605      No      No
05/21/2015 03:09:54 FSM state change 0x60704      No      No
05/21/2015 03:09:54 Fill VIMI attr 0x20002      No      No
05/21/2015 03:10:45 FSM state change 0x70605      No      No
05/21/2015 05:21:17 FSM state change 0x60704      No      No
05/21/2015 05:21:17 Fill VIMI attr 0x20002      No      No

```

PW-HE IDB client data

```

-----
IDB handle 0x5016db2c
Dot1q vlan: 0x81000000
Label: 16001
Remote VC label: 17
Remote PE: 6.6.6.6
Use flow-label on tx: N
L2-overhead: 0
VC-type: 5
CW: N
FSM state: 'Up'(7)
Fwding is up: Y, got route update: Y
Use OWNED_RESOURCE fwding: N
OWNED_RESOURCE fwding is up: N
OWNED_RESOURCE data&colon; 0
Replication error msg has been printed: N
VIF MA reg_handle: 50049e10
PIC array:
  (nil)
Replicate retry count: 0
Configured i/f list name: 'BE20_ONLY'
From L2VPN i/f list name: 'BE20_ONLY', i/f list id: 1
  L3 i/f: 'Bundle-Ether20', idx=0, repl_status 1, fwding up:N, active:Y

```

```

L3 i/f:'GigabitEthernet0/0/1/18', idx=1, repl_status 1, fwding up:Y, active:Y
L3 i/f:'GigabitEthernet0/0/1/19', idx=2, repl_status 1, fwding up:Y, active:Y
List intf: 0x5016e154, PLs size:4, num in use:2
I/f:'Gi0/0/1/18', ifh:0x4000540, bundle: 0xb20, ifl idx:1, in-use:Y, misconfig:Y, in peer
route:Y, VIMI active:Y
Repl:Y pending:N failed:N not supp:N, unrepl pending:N failed:N, up:Y us:3
I/f:'Gi0/0/1/19', ifh:0x4000580, bundle: 0xb20, ifl idx:2, in-use:Y, misconfig:Y, in peer
route:Y, VIMI active:Y
Repl:Y pending:N failed:N not supp:N, unrepl pending:N failed:N, up:Y us:3
I/f:'', ifh:0x0, bundle: 0x0, ifl idx:0, in-use:N, misconfig:N, in peer route:N, VIMI
active:N
Repl:N pending:N failed:N not supp:N, unrepl pending:N failed:N, up:N us:0
I/f:'', ifh:0x0, bundle: 0x0, ifl idx:0, in-use:N, misconfig:N, in peer route:N, VIMI
active:N
Repl:N pending:N failed:N not supp:N, unrepl pending:N failed:N, up:N us:0

```

检查PW-HE摘要信息

检查计数器在输出中正确

- 显示l2vpn pwhe摘要

```

RP/0/RSP0/CPU0:ACDC-ASR9000-1#show l2vpn ma pwhe interface PW-Ether 20 private
Thu May 21 05:36:28.170 UTC
Interface: PW-Ether20   Interface State: Up, Admin state: Up
Interface handle 0x920
MTU: 1514
BW: 10000 Kbit
Interface MAC addresses (1 address):
10f3.1172.02c5
IDB is not in Replicate Linked List
IDB is not in Create Linked List
IDB is not in Attr Linked List
Opaque flags: 0xe
Flags: 0x3c
Valid : IFH, MTU, MAC, BW
MA trace history [Num events: 32]

```

```

-----
Time                Event                Value                Sticky Many
====                =====                =====                =====
05/21/2015 02:56:05 Remove retry list    0x3                  No         No
05/21/2015 02:56:05 IDB Set flag         0x3c                 No         No
05/21/2015 03:08:26 IDB Set State        0x1                  No         No
05/21/2015 03:08:26 IM publish attr     0x45                 No         No
05/21/2015 03:08:26 IM update init-data 0x1e                 No         No
05/21/2015 03:08:26 IDB Set flag         0x3c                 No         No
05/21/2015 03:08:26 Remove retry list    0x3                  No         No
05/21/2015 03:08:26 IDB Set flag         0x3c                 No         No
05/21/2015 03:09:54 IDB Set State        0                    No         No
05/21/2015 03:09:54 IM publish attr     0x45                 No         No
05/21/2015 03:09:54 IM publish attr     0x52                 No         No
05/21/2015 03:09:54 IM update init-data 0x1e                 No         No
05/21/2015 03:09:54 IDB Set flag         0x3c                 No         No
05/21/2015 03:09:54 Remove retry list    0x3                  No         No
05/21/2015 03:09:54 IDB Set flag         0x3c                 No         No
05/21/2015 03:09:54 Remove retry list    0x3                  No         No
05/21/2015 03:09:54 IDB Set flag         0x3c                 No         No
05/21/2015 03:10:45 IDB Set State        0x1                  No         No
05/21/2015 03:10:45 IM publish attr     0x45                 No         No
05/21/2015 03:10:45 IM update init-data 0x1e                 No         No
05/21/2015 03:10:45 IDB Set flag         0x3c                 No         No

```

05/21/2015 03:10:45	Remove retry list	0x3	No	No
05/21/2015 03:10:45	IDB Set flag	0x3c	No	No
05/21/2015 05:21:17	IDB Set State	0	No	No
05/21/2015 05:21:17	IM publish attr	0x45	No	No
05/21/2015 05:21:17	IM publish attr	0x52	No	No
05/21/2015 05:21:17	IM update init-data	0x1e	No	No
05/21/2015 05:21:17	IDB Set flag	0x3c	No	No
05/21/2015 05:21:17	Remove retry list	0x3	No	No
05/21/2015 05:21:17	IDB Set flag	0x3c	No	No
05/21/2015 05:21:17	Remove retry list	0x3	No	No
05/21/2015 05:21:17	IDB Set flag	0x3c	No	No

CLIENT MA trace history [Num events: 27]

```

-----
Time          Event          Value          Sticky Many
====          =====          =====
05/21/2015 02:54:01 IM Notify Up    0x50049e10    No      No
05/21/2015 02:54:01 FSM state change 0x200         No      No
05/21/2015 02:54:01 FSM state change 0x2030d       No      No
05/21/2015 02:54:02 Double restart detected 0x5           No      No
05/21/2015 02:55:00 I/f created/added 0x4000540     No      No
05/21/2015 02:55:00 I/f created/added 0x4000580     No      No
05/21/2015 02:55:00 I/f created/added 0x4000540     No      No
05/21/2015 02:55:00 I/f created/added 0x4000580     No      No
05/21/2015 02:55:00 Intf list change 0x3000300     No      No
05/21/2015 02:55:00 Intf add error   0x4000540     No      No
05/21/2015 02:55:00 Intf add error   0x4000580     No      No
05/21/2015 02:55:00 FSM state change 0x30505       No      No
05/21/2015 02:55:01 Replicate result 0x13fe        No      No
05/21/2015 02:55:01 FSM state change 0x5060b       No      No
05/21/2015 02:55:01 I/f up           0x4000580     No      No
05/21/2015 02:55:01 I/f up           0x4000580     No      No
05/21/2015 02:55:02 I/f up           0x4000540     No      No
05/21/2015 02:55:02 I/f up           0x4000540     No      No
05/21/2015 02:56:05 Added to peer    0x6060606     No      No
05/21/2015 02:56:05 FSM state change 0x60704       No      No
05/21/2015 02:56:05 Fill VIMI attr  0x20002       No      No
05/21/2015 03:08:26 FSM state change 0x70605       No      No
05/21/2015 03:09:54 FSM state change 0x60704       No      No
05/21/2015 03:09:54 Fill VIMI attr  0x20002       No      No
05/21/2015 03:10:45 FSM state change 0x70605       No      No
05/21/2015 05:21:17 FSM state change 0x60704       No      No
05/21/2015 05:21:17 Fill VIMI attr  0x20002       No      No

```

PW-HE IDB client data

```

-----
IDB handle 0x5016db2c
Dot1q vlan: 0x81000000
Label: 16001
Remote VC label: 17
Remote PE: 6.6.6.6
Use flow-label on tx: N
L2-overhead: 0
VC-type: 5
CW: N
FSM state: 'Up'(7)
Fwding is up: Y, got route update: Y
Use OWNED_RESOURCE fwding: N
OWNED_RESOURCE fwding is up: N
OWNED_RESOURCE data&colon; 0
Replication error msg has been printed: N
VIF MA reg_handle: 50049e10
PIC array:
  (nil)

```

```
Replicate retry count: 0
Configured i/f list name: 'BE20_ONLY'
From L2VPN i/f list name: 'BE20_ONLY', i/f list id: 1
  L3 i/f:'Bundle-Ether20', idx=0, repl_status 1, fwding up:N, active:Y
  L3 i/f:'GigabitEthernet0/0/1/18', idx=1, repl_status 1, fwding up:Y, active:Y
  L3 i/f:'GigabitEthernet0/0/1/19', idx=2, repl_status 1, fwding up:Y, active:Y
List intf: 0x5016e154, PLs size:4, num in use:2
  I/f:'Gi0/0/1/18', ifh:0x4000540, bundle: 0xb20, ifl idx:1, in-use:Y, misconfig:Y, in peer
route:Y, VIMI active:Y
    Repl:Y pending:N failed:N not supp:N, unrepl pending:N failed:N, up:Y us:3
  I/f:'Gi0/0/1/19', ifh:0x4000580, bundle: 0xb20, ifl idx:2, in-use:Y, misconfig:Y, in peer
route:Y, VIMI active:Y
    Repl:Y pending:N failed:N not supp:N, unrepl pending:N failed:N, up:Y us:3
  I/f:'', ifh:0x0, bundle: 0x0, ifl idx:0, in-use:N, misconfig:N, in peer route:N, VIMI
active:N
    Repl:N pending:N failed:N not supp:N, unrepl pending:N failed:N, up:N us:0
  I/f:'', ifh:0x0, bundle: 0x0, ifl idx:0, in-use:N, misconfig:N, in peer route:N, VIMI
active:N
    Repl:N pending:N failed:N not supp:N, unrepl pending:N failed:N, up:N us:0
```

检查标签

在标签表里检查标签

您首先需要从xconnect信息获得内部标号用此命令。

- 显示l2vpn xconnect详细信息

然后内部标号的search在缩小然后执行show命令的此验证lable并且建立接口ASR9K的关联。

- 显示mpls标签表标签internal_label详细信息

```
RP/0/RSP0/CPU0:ACDC-ASR9000-1#show l2vpn xconnect detail
Thu May 21 05:27:11.762 UTC
```

```
Group PWHE, XC ASR1K, state is up; Interworking none
```

```
AC: PW-Ether20, state is up
```

```
Type PW-Ether
```

```
Interface-list: BE20_ONLY
```

```
Replicate status:
```

```
BE20: success
```

```
Gi0/0/1/18: success
```

```
Gi0/0/1/19: success
```

```
MTU 1500; interworking none
```

```
Internal label: 16001 Statistics: packets: received 27293, sent 0 bytes: received 1996176,
sent 0 PW: neighbor 6.6.6.6, PW ID 2020, state is up ( established ) PW class asr1k, XC ID
0xc0000001 Encapsulation MPLS, protocol LDP Source address 5.5.5.5 PW type Ethernet, control
word disabled, interworking none PW backup disable delay 0 sec Sequencing not set
```

```
RP/0/RSP0/CPU0:ACDC-ASR9000-1#show l2vpn xconnect detail
```

```
Thu May 21 05:27:11.762 UTC
```

```
Group PWHE, XC ASR1K, state is up; Interworking none
```

```
AC: PW-Ether20, state is up
```

```
Type PW-Ether
```

```
Interface-list: BE20_ONLY
```

```
Replicate status:
```

```
BE20: success
```

```
Gi0/0/1/18: success
```

```
Gi0/0/1/19: success
```

```
MTU 1500; interworking none
```

```
Internal label: 16001 Statistics: packets: received 27293, sent 0 bytes: received 1996176, sent 0 PW: neighbor 6.6.6.6, PW ID 2020, state is up ( established ) PW class asr1k, XC ID 0xc0000001 Encapsulation MPLS, protocol LDP Source address 5.5.5.5 PW type Ethernet, control word disabled, interworking none PW backup disable delay 0 sec Sequencing not set
```

流量丢弃/不出现的塞申斯

如果会话没有出来，请检查数据包是否在NP丢弃。您能使用这些命令发现丢包在ASR9K的NP。

- clear counters
- 显示I2vpn xconnect详细信息|包括数据包
- clear controller np抵抗所有
- show controller np抵抗所有

涉及的BNG显示命令

请使用这些in命令顺序检查BNG相关信息在ASR9K。

- show subscriber会话所有摘要
- show subscriber管理器断开历史记录唯一摘要
- show subscriber管理器统计信息调试总计
- show subscriber管理器统计信息摘要总计
- show subscriber管理器trace事件/错误

将启用的调试

如果会话在ASR9K没有出来，并且您在NP没有查找任何数据包丢弃您能然后使在ASR9K的这些调试发现会话为什么在ASR9K不出来。

- 调试I2vpn ea pwhe平台verbose
- 调试I2vpn转发平台共同性全部
- 调试下午api位置<location>
- 调试下午错误定位<location>
- 调试uidb api错误定位<location>

上报

如果请仍然安排一个问题提供援助对Cisco TAC和从ASR9K收集Show tech。

- show tech-support用户
- show tech-support I2vpn