

# Sessão de IPoE sobre o final do cabeçalho de Pseudowire no gateway da rede de banda larga

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## Introdução

Este original descreve as etapas para configurar o IP sobre sessões dos Ethernet (IPoE) sobre o final do cabeçalho de Pseudowire (PWHE) em ASR9K.

## Pré-requisitos

### Requisitos

A Cisco recomenda que você tenha conhecimento destes tópicos:

- Camada 2 VPN MPLS
- Funcionalidade BNG em ASR9K

Dica: Refira o [guia de configuração de gateway da rede de banda larga para o](#) artigo de Cisco do [9000 Series de Cisco ASR](#) a fim ganhar a familiaridade com a funcionalidade BNG.

Dica: Refira o artigo de Cisco do [manual de configuração do VPNs de camada 2 MPLS](#) a fim ganhar a familiaridade com o VPNs de camada 2 MPLS.

## Componentes Utilizados

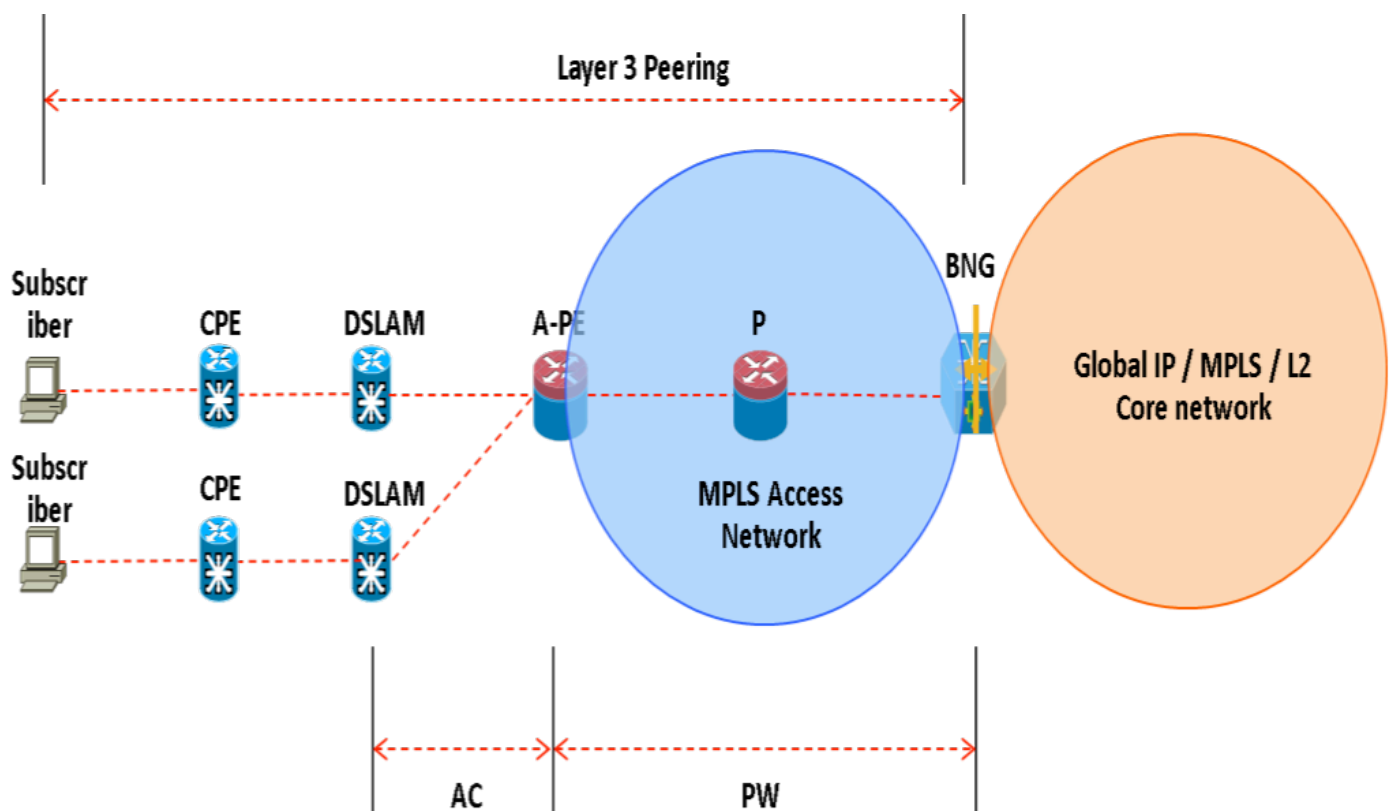
Este original não é restringido à versão de software específica mas o linecard que nós usamos em ASR9K é A9K-MPA-20X1GE.

As informações neste documento foram criadas a partir de dispositivos em um ambiente de laboratório específico. Todos os dispositivos utilizados neste documento foram iniciados com uma configuração (padrão) inicial. Se a sua rede estiver ativa, certifique-se de que entende o impacto potencial de qualquer comando.

## Informações de Apoio

BNG fornece o apoio do subscritor sobre PWHE. PWHE fornece a Conectividade L3 aos Nós do edge de cliente através de uma conexão do pseudowire. PWHE termina os circuitos L2VPN que existe entre os Nós da borda do acesso-fornecimento (MACACO), a uma interface virtual, e executa o roteamento no pacote de IP nativo. Cada interface virtual pode usar umas ou várias interfaces física para a nuvem do acesso para alcançar roteadores de cliente através dos Nós do MACACO.

Nota: Esta característica é apoiada para o subscritor de PPPoE PTA, de PPPoE LAC sobre PWHE e os assinantes de IPoE.



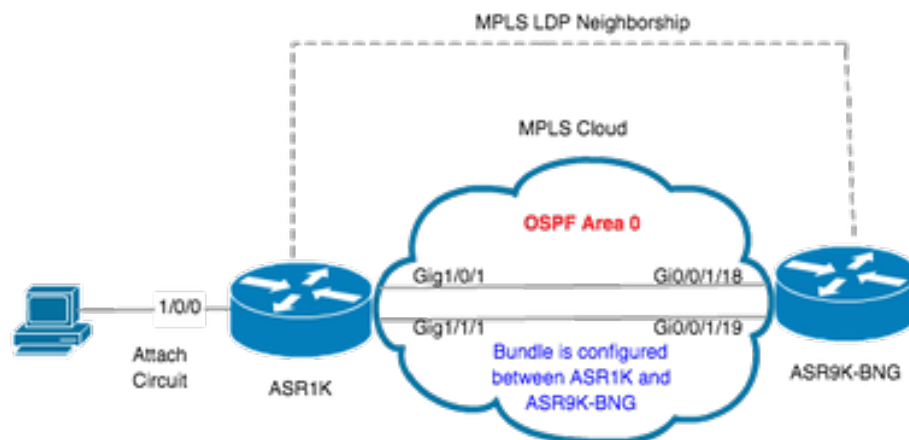
## Configurar

## Diagrama de Rede

A fim executar este teste, um ASR1K com a versão 154-3.S2 é empregado e ASR9K com versão IOS-XR 5.2.2. O OSPF é usado como o protocolo de roteamento para alcançar-se endereços de loopback.

Endereço de loopback ASR9K: 10.1.1.1/32

Endereço de loopback ASR1K: 10.2.2.2/32



## ASR1K

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

```
interface GigabitEthernet1/0/0 no ip address media-type rj45 negotiation auto cdp enable
xconnect 10.1.1.1 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 192.168.20.2 255.255.255.0
no negotiation auto
mpls ip
end

```

## ASR9K

Está aqui a configuração de ASR9K, que atua como 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 192.168.20.2 255.255.255.0
no negotiation auto
mpls ip
end

```

Agora, configurar o xconnect entre ASR1K e ASR9K. Especifique o endereço de loopback de ASR1K (10.2.2.2/32) como o vizinho do xconnect.

```

12vpn router-id 10.1.1.1 pw-class ASR1K encapsulation mpls transport-mode ethernet ! ! xconnect group PWHE p2p ASR1K
interface PW-Ether20 neighbor ipv4 10.2.2.2 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 192.168.1.1 255.255.255.0
  attach generic-interface-list BE20_ONLY
!

```

Agora, configurar a política de controle do subscritor e aplique-a na relação dos Picowatt-Ethernet onde o subscritor é terminado.

```

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 192.168.10.1 255.255.255.252
  service-policy type control subscriber IPoE_WDAAR_PWHE
  encapsulation dot1q 250
  ipsubscriber ipv4 l2-connected
  initiator dhcp
!
!

```

## Verificar

Esta seção fornece a informação que você pode usar a fim verificar que sua configuração trabalha corretamente. Estão aqui os comandos que você pode empregar para verificar que o xconnect é UP/UP em 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 | <b>UP</b> | PE20        | UP        | 10.2.2.2    | 2020 <b>UP</b> |

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

| AToM         | UP | DOWN | UNR |
|--------------|----|------|-----|
| Like-to-Like |    |      |     |
| 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 192.168.44.254
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    | 192.168.44.254 (default) |

Uma vez que o xconnect é ASCENDENTE e a sessão de IPoE vem em linha em ASR9K que você pode ver que a interface de acesso é Picowatt-éter.

```
RP/0/RSP0/CPU0:ACDC-ASR9000-1#show subscriber session filter ipv4-address 192.168.44.254 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:              192.168.44.254, 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
```

Agora, verifique a Conectividade da camada 3 do subscritor BNG sobre PWHE.

```
RP/0/RSP0/CPU0:ACDC-ASR9000-1#show subscriber session filter ipv4-address 192.168.44.254 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:              192.168.44.254, 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

## Troubleshooting

Esta seção fornece a informação que você pode usar a fim pesquisar defeitos sua configuração e verificar o estado do xconnect em ASR9K.

### Comando verificar a configuração ASR9K

Estes comandos podem ser usados para verificar que a configuração está correta em ASR9K.

- mostre a executar-configuração l2vpn
- mostre a executar-configuração int PW-Ether<Interface-Number>
- mostre o ldp dos mpls da executar-configuração
- mostre a genérico-relação-lista da executar-configuração

### Verifique L2VPN XC

Verifique o xconnect. O xconnect (e consequentemente a C.A. e o picowatt) têm que estar acima. Você pode empregar estes comandos verificar o estado.

- mostre o sumário do xconnect l2vpn

```
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 10.2.2.2, PW ID 2020, state is up ( established )

PW class asr1k, XC ID 0xc0000001

Encapsulation MPLS, protocol LDP

Source address 10.1.1.1

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

```

## Verifique a lista de interface

Indique a lista de interface usada pelo PWHE: deve existir e ter as relações apropriadas.

- mostre o nome <NAME> da genérico-relação-lista

```

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 10.2.2.2, PW ID 2020, state is up ( established )
  PW class asr1k, XC ID 0xc0000001
  Encapsulation MPLS, protocol LDP
  Source address 10.1.1.1
  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

## Verifique PWHE usado por uma lista de interface

A saída privada abaixo indica que relações do membro são “active” isto é qual foram transferidas PARA MENTIR.

- mostre o nome <NAME> da genérico-relação-lista l2vpn
- mostre a genérico-relação-lista l2vpn privada

```

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 10.2.2.2, PW ID 2020, state is up ( established )

PW class asr1k, XC ID 0xc0000001

Encapsulation MPLS, protocol LDP

Source address 10.1.1.1

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

```

## Certifique-se do MA tenha o PWHE com informação direita

A informação da lista de interface, o CW, o VC-tipo etc., têm que ser ajustados corretamente no MA.

```
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: 10.2.2.2
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

```

## Verifique a informação sumária PWHE

Certifique-se dos contadores na saída estejam corretos:

- mostre o sumário do pwhe l2vpn

```
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: 10.2.2.2
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: 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

```

## Verifique etiquetas

Verifique a etiqueta na tabela da etiqueta. Você precisa de obter primeiramente as etiquetas internas da informação do xconnect com este comando.

- **mostre o detalhe do xconnect l2vpn**

então o seach para a **etiqueta interna nas saídas** e executa então este comando show verificar a associação da etiqueta e da relação em ASR9K.

- **detalhe do <internal\_label> da etiqueta da tabela da etiqueta dos mpls da mostra**

```

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 10.2.2.2, PW ID 2020, state is up ( established )
  PW class asr1k, XC ID 0xc0000001
  Encapsulation MPLS, protocol LDP

```

```
Source address 10.1.1.1
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 10.2.2.2, PW ID 2020, state is up ( established )
  PW class asr1k, XC ID 0xc0000001
  Encapsulation MPLS, protocol LDP
  Source address 10.1.1.1
  PW type Ethernet, control word disabled, interworking none
  PW backup disable delay 0 sec
  Sequencing not set
```

## A gota/sessões do tráfego não vem acima

Se a sessão não vem acima, verifique se os pacotes deixaram cair no NP. Você pode usar estes comandos para ver a queda de pacote de informação no NP em ASR9K.

- **clear counters**
- **mostre o detalhe do xconnect l2vpn | inclua o pacote**
- **cancele controladores que o NP opõe tudo**
- **mostre que o controlador NP opõe tudo**

## Comandos show relacionados BNG

Use estes comandos na verificação de ordem a informação relacionada BNG em ASR9K.

- **mostre a sessão do subscritor todo o sumário**
- **mostre a desconexão-história do gerente do subscritor o sumário original**
- **as estatísticas do gerente do subscritor da mostra debugam o total**
- **mostre o total do sumário das estatísticas do gerente do subscritor**
- **mostre o evento/erro do traço do gerente do subscritor**

## Debuga para ser permitido

Se a sessão não veio acima em ASR9K e você não encontrou que todo o pacote deixado cair no NP então que você pode permitir estes debuga em ASR9K para ver porque a sessão não está vindo acima em ASR9K.



- debugar a plataforma do pwhe l2vpn ea verboso
- debugar a terra comum toda da plataforma da transmissão l2vpn
- debugar o <location> do lugar pm api
- debugar o <location> do lugar de erro pm
- debugar o <location> do lugar de erros api do uidb

## **Agravamento**

Se você ainda manda uma edição por favor alcançar para fora ao tac Cisco e recolher a tecnologia da mostra de ASR9K.

- mostre o subscritor do tecnologia-apoio
- mostre o tecnologia-apoio l2vpn