

Sessão de IPoE sobre o final do cabeçalho de Pseudowire no gateway da rede de banda larga (BNG)

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Introdução

Este documento descreve as etapas para configurar o IP sobre sessões dos Ethernet (IPoE) sobre o final do cabeçalho de Pseudowire 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 documento não é restringido à versão de software específica mas a placa de linha 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 o final do cabeçalho de Pseudowire (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.

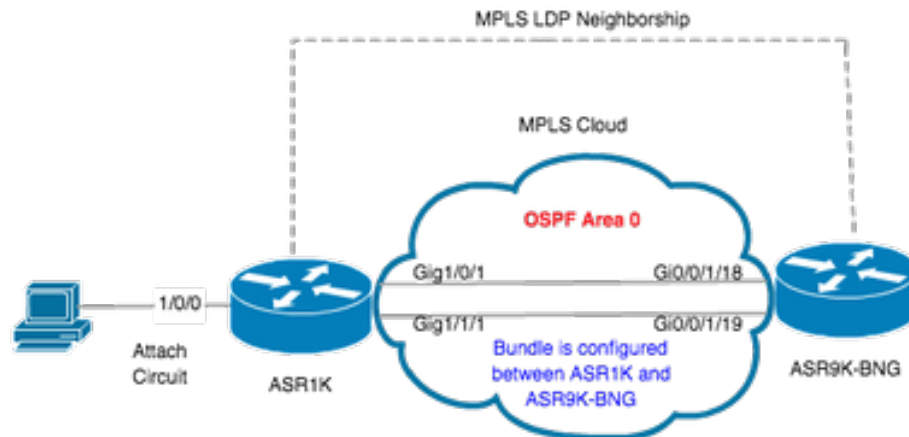
Nota: Esta característica é apoiada para o subscritor PPPoE PTA, PPPoE LAC sobre PWHE e os assinantes de IPoE.

Diagrama de Rede

Para estes testes um ASR1K com 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: 5.5.5.5/32

Endereço de loopback ASR1K: 6.6.6.6/32



Configuração

Configurar 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
```

Configurar 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 20.20.20.2 255.255.255.0
no negotiation auto
```

```
mpls ip
end
```

Configurar agora o xconnect entre ASR1K e ASR9K. Especifique o endereço de loopback de ASR1K (6.6.6.6/32) como o vizinho do xconnect.

```
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
!
```

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 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
!
!

```

Verificação

Esta seção fornece a informação que você pode usar a fim verificar que sua configuração trabalha corretamente. Estão abaixo 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	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)

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

```

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

Verifique agora a Conectividade da camada 3 do subscritor BNG sobre PWHE.

```
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

Pesquisa defeitos PWHE

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 mppls da executar-configuração
- mostre a genérico-relação-lista da executar-configuração

Verifique L2VPN XC

Verifique o xconnect. O xconnect (e conseqüentemente o AC 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 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

Verifique a lista de interface

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

- mostre o <NAME> do nome 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 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 (LSP ping verification)	0x2 (LSP ping verification)
VCCV CC type	0x6 (router alert label) (TTL expiry)	0x6 (router alert label) (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 PW-HE usado por uma lista de interface

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

- mostre o <NAME> do nome 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 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

Certifique-se do MA tenha o PW-HE 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: 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: 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 PW-HE

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: 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: 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 primeiramente de obter as etiquetas internas da informação do xconnct com este

comando.

- mostre o detalhe do xconnect l2vpn

e então o seach para a **etiqueta interna na saída** 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 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
```

Gota/sessões do tráfego que não vêm acima

Se a sessão não veio acima, verifique por favor se os pacotes estão deixando cair no NP. você pode usar estes comandos 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