

# ثبلاو لابق تسالا ءءو ربع IPoE لمع ءسلج قاطنلا ءساو ءكبشلا ءباوب يف ءرهظلا

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## ءمءملا

لابق تسالا ءءو ربع (IPoE) تءرءءملا لءءءمءم ءسلج نءوكءم تاوطفءمءم ءءءملا اءه ءصءملا  
ASR9K ىلء (PWHE) ءرهظلا ءبلاو

## ءسسأسالا تابللطءملا

### تابللطءملا

ءءءءملا ءءءءءءمءم ءءءءمءم ءءءءمءم نءوكءم نأب Cisco ءءءءمءم:

- MPLS نم 2 ءءءءمءم (VPN) ءرهظلا ءصءءمءم ءكبشلا
- ASR9K ىلء BNG ءءءءمءم

Cisco [ASR 9000 Series](#) لءءءمءم ءءءءمءم قاطنلا ءكبش ءءءءمءم نءوكءم لءءءمءم ءءءءمءم  
BNG ءءءءمءم ءءءءمءم بءسءءمءم لءءءمءم Cisco.

ة فرع م ىلع لوصحلل ةلاقم ال Cisco [MPLS Layer 2 VPNs](#) نيوكت لىلد ىلإ عجرا :حيملت  
MPLS ل 2 ةقبطال نم VPN تاكبش لوج

## ةمدختسملا تانوكملا

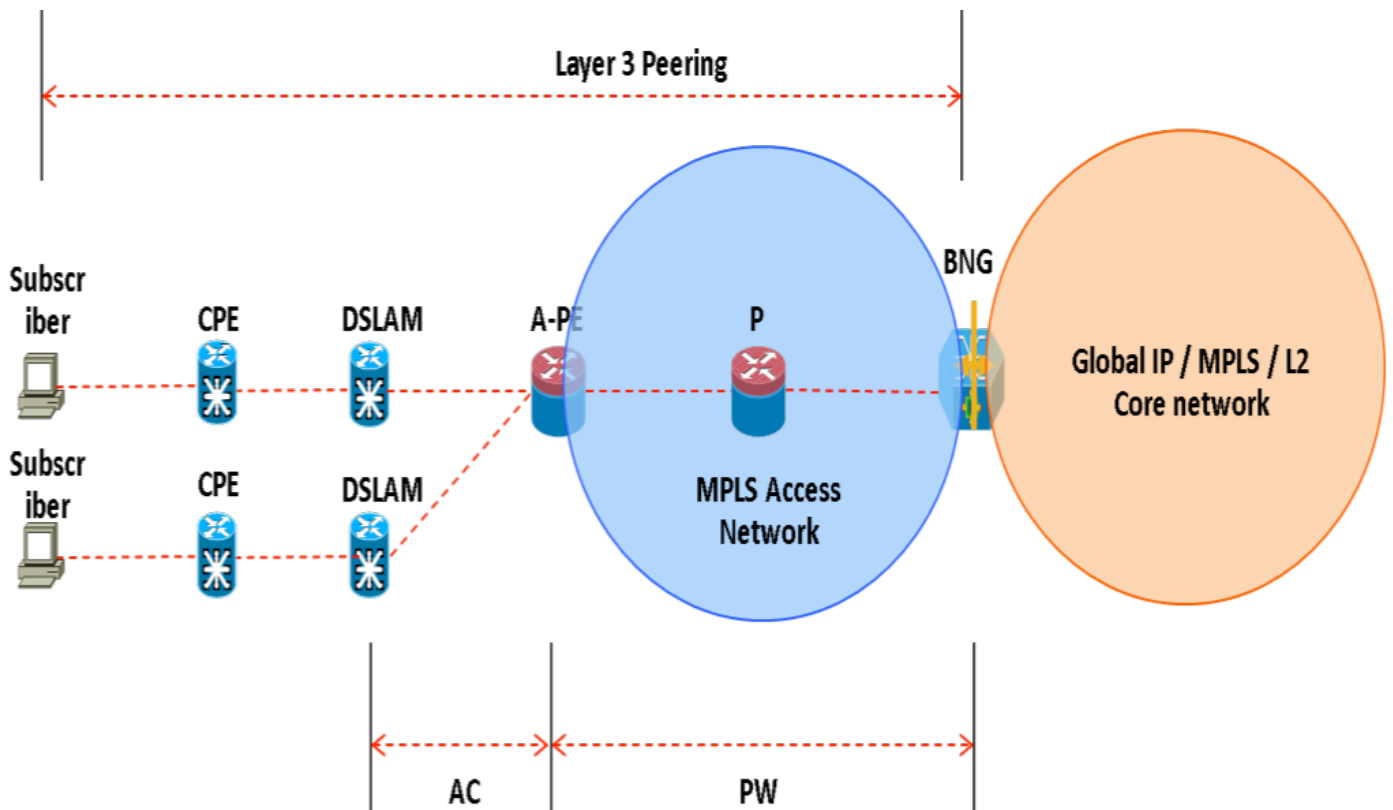
ىلع اهانمدختسأ ىتلا طخال ةقاطب نكلو ددجم چمانرب رادصا ىلع دنننسملا اذه رصتقي ال  
ASR9K هه A9K-MPA-20X1GE.

ةصاخ ةيلمعم ةئيب يف ةدوجوملا ةزهجال نم دنننسملا اذه يف ةدراول تاملولعمل عاشنإ مت  
تنك اذا .(يضا رتفا) حوسمم نيوكتب دنننسملا اذه يف ةمدختسمل ةزهجال عيمج تادب  
رما ىل لمحتحمل ريثاتلل كمهف نم دكاتف ، ةرشابم كتكبش

## ةيساسأ تامولعم

ىوتسملا نم لاصتالا ةينانكم PWHE ةمدخ رفوت . PWHE ربع كرتشملا معد BNG رفوي  
دقع نيب ةدوجوم ال L2VPN رئاود PWHE يهنى . بذاك لاصتالا لالخنم ليمعلا ةفاح دقع ل ثلاثلا  
IP ةمزح ىلع هيجوتلاب موقيو ، ةيضا رتفا ةهجاو ىلإ ، Access-supply edge (A-PE)  
ةومجم ىلإ لوصولل رثكأ وأ ةدحاو ةيدام ةهجاو مادختسا ةيرهاظ ةهجاو لكل نكمي . ةيلصلال  
A-PE دقع لالخنم ءالمعلا تاهجوم ىلإ لوصولل ءارظنلا

مكحتلاب صاخ ال PPPoE كرتشمو ، PPPoE ب صاخ ال PTA ل ةمومدم ةزيملا هه :ةظالم  
IPoE و PWHE يكرتشم ربع (LAC) تنرتي ةكبش ىلإ لوصولا يف



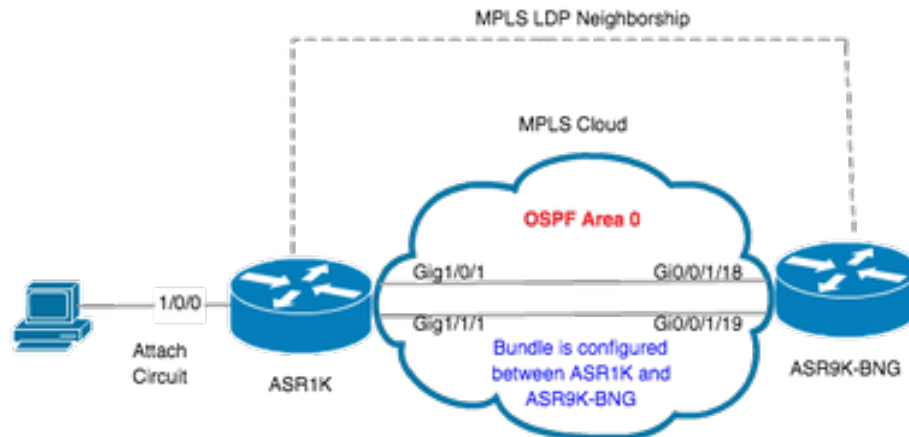
## نيوكتلا

ةكبش لىل طيختلا مسرلا

IOS رادصإلا عم ASR9K و 154-3.S2 رادصإلا عم دحاو ASR1K مادختسا متي ، رابتخالا اذه عاجإلا و XR 5.2.2. عاچرتسالا نپوانع ىلا لوصولل هيچوت لوكوتوربك OSPF مادختسا متي .

ASR9K: 10.1.1.1/32 عاچرتسا ناونع

ASR1K: 10.2.2.2/32 عاچرتسا ناونع



## 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

فيم ل م ن ي و ك ت ل ا ي ل ي ام ي ف BNG PWHE ك ل م ل ي ذ ل و ا و ASR9K، م ن ي و ك ت ل ا ي ل ي ام ي ف.

```
RP/0/RSP0/CPU0:ACDC-ASR9000-1#show bundle bundle-ether 20 Thu May 21 06:35:39.294 UTC Bundle-Ether20 Status: Up
Local links
ASR9K ل م ن ي و ك ت ل ا ي ل ي ام ي ف ASR1K و ASR9K ن ي و ك ت ل ا ي ل ي ام ي ف Xconnect، ن ا ل ا Xconnect ل ر ا ج ك (10.2.2.2/32) ل م ن ي و ك ت ل ا ي ل ي ام ي ف د ح .
```

```
l2vpn 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
!
ك ر ت ش م ل ا ء ا ه ن ا م ت ي ث ي ح Pw ت ن ن ر ث ي ا ة ه ج ا و ل ع ه ق ي ب ط ت و ك ر ت ش م ل ا ي ف م ك ح ت ل ا ج ه ن ن ي و ك ت ل ا ي ل ي ام ي ف، ن ا ل ا .
```

```
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
!
!

```

## قصة اتصال

حيث حصل لشب لمعي نيوكالتا نأ نم ققحتلل اهمادختسا كنكمي تامولعم مسقلا اذه رفوي  
 ASR9K على UP/UP وه Xconnect نأ نم ققحتلل اهمادختسا كنكمي يتلا رماوالا يلي اميف

```

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 Group	Name	ST	Segment 1 Description	ST	Segment 2 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

```

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 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)

كنكمي ASR9K على تنرتنإل ربع IPoE لمع ةسلج لوصولو UP ب XCONNECT لاصتا درجم ب  
 PW-Ether. ه لوصولا ةهجاو نأ ةيؤر

```

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
```

ق قحت BNG كرتش مل 3 ةق بطلال لاصتا نم نأل ق قحت PWHE.

```
RP/0/RSP0/CPU0:ACDC-ASR9000-1#ping 192.168.44.254
Mon Feb 23 19:37:58.188 UTC
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.44.254, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/1/2 ms
RP/0/RSP0/CPU0:ACDC-ASR9000-1#
```

## اه حال صا وء اطخا ل فاش كتسا

ق قحت ل واه حال صا و نيوكت ل ء اطخا فاش كتسا ل اهم ادختسا ل كنكمي تام ول عم مس ق ل اذه رفوي  
ق ل ع ASR9K ل ع xconnect ة ل ا ح نم

## ASR9K نيوكت نم ق قحت ل ل رمأ

ASR9K ل ع نيوكت ل ة حص نم ق قحت ل ل رما و ا ل هذه مادختسا ل كنكمي

- show running-configuration l2vpn
- show running-configuration int pw-ether<interface-number>
- show running-configuration mpls ldp
- show running-configuration generic-interface-list

## XC ةزه أ L2VPN ص ح ف

ل ل غشت ل ا ديق (PW و AC ل ل ا ل ا ب و) Xconnect نوكتي نأ ب ج ي. xconnect زار طال نم ق قحت  
ة ل ا ح نم ق قحت ل ل رما و ا ل هذه مادختسا ل كنكمي

- show l2vpn xconnect summary

```
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

show l2vpn xconnect interface <Interface> detail

OR

show l2vpn xconnect detai

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

## ةهجاوإا ةمئاق نم ققحتإا

تاهجاوإا إىل ع يوتحت نأو ةدوجوم نوكت نأ بجي PWHE: اهمدختسي يتإا ةهجاوإا ةمئاق ضرع ةبس انمإا

- **show generic-interface-list name <name>**

```
RP/0/RSP0/CPU0:ACDC-ASR9000-1#show generic-interface-list name BE20_ONLY
Thu May 21 05:43:26.649 UTC
generic-interface-list: BE20_ONLY (ID: 1, interfaces: 3)
  Bundle-Ether20 - items pending 0, downloaded to FIB
  GigabitEthernet0/0/1/18 - items pending 0, downloaded to FIB
  GigabitEthernet0/0/1/19 - items pending 0, downloaded to FIB
Number of items: 1
List is downloaded to FIB
```

## ةهجاوإا ةمئاق لبق نم مدختسمإا PWHE نم ققحتإا

اهل يزنت مت يتإا ءاضعأإا تاهجاوإا، "ةطشنلإا" ءاضعأإا تاهجاوإا إىل هاندأ صاخإا جارخإا ريشي إىل FIB.

- **<NAME> show l2vpn generic-interface-list**
- **show l2vpn generic-interface-list private**

```
RP/0/RSP0/CPU0:ACDC-ASR9000-1#show l2vpn generic-interface-list name BE20_ONLY detail
Thu May 21 05:39:04.983 UTC
Generic-interface-list: BE20_ONLY (ID: 1, interfaces: 3)
  Bundle-Ether20 - items pending 0
  GigabitEthernet0/0/1/18 - items pending 0
  GigabitEthernet0/0/1/19 - items pending 0
Number of items: 1
PW-Ether: 20
```

## ةححص تامولعم "ام" إىل نأ نم دكأ

MA. يف ححص لكشب كلذ إىل امو VC-type و CW و list-ةهجاوإا تامولعم نيي عت بجي

```
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

## صخلم تامولعم نم ققحتلا PWHE

جارخالا يف ةدوجوملا تادادعلا ةحص نم ققحت

- show l2vpn pwhe صخلم

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

Thu May 21 05:35:59.381 UTC

Number of PW-HE interfaces: 1

Up: 1 Down: 0 Admindown: 0

PW-Ether: 1

Up: 1 Down: 0 Admindown: 0

PW-IW: 0

Up: 0 Down: 0 Admindown: 0

## تاي مستال صحف

ةي لخادل تاي مستال لى لوصحل ال ال اجاتحت .ةي مستال لودج ي في ةي مستال نم ققحت رم ال اذه مادختساب Xconnect تامولعم نم

- **show l2vpn xconnect** لي صافات

نم ققحت لل اذه ضرع ال رم اذيفنتب مق مذفنم ل ي في ةي لخادل تاي مستال نع ثحبا م ث ASR9K لى عة جاول او سايق لل ةي لباقل ال نارثقا

- **MPLS <internal\_label>** ةي مست لودج ةي مست لي صافات ضرع

```
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 mpls label table label 16001 detail
Thu May 21 05:27:55.760 UTC
```

Table	Label	Owner	State	Rewrite
0	16001	L2VPN:Active	InUse	Yes

(PW-HE, vers:0, intf=PE20)

## لمعلا تاسلج/رورم ال ةكرح طاقس ا متي ال

يري نأ رمأ اذه تلمعتسا عيطتسي تنأ NP. في تطقس طبرن ا تصحف ،ةسلج رهظي ال ن ا ASR9K لى ع NP في طاقس ا طبرل

- clear counters
- ةمزل ني مضت | show l2vpn xconnect لي صافات
- لك ال مكحتل ا ادحول np ا اداع حسم
- show controller np counters all

## BNG بة قطب ترم ل show رم اوأ

ASR9K لى ع BNG بة لصل ل اذ تامل عمل نم ققحت ل ل رم اوأ ل هذه مدخت س أ

- صل ل ل ل ك كرت ش م ل ل مع ة سل ل راهظ ل
- ديرف صل ل م show subscriber manager disconnect-history
- كرت ش م ل ر ي دم تاي ئ اص ح ل ا ط خ أ ح ي حص ت ي ل ام ح ل راهظ ل
- كرت ش م ل ر ي دم تاي ئ اص ح ل صل ل م ي ل ام ح ل راهظ ل
- كرت ش م ل ر ي دم ع بت ت ا ط خ / ث د ح راهظ ل

## اهن ي ك م ت ب ول ط م ل ا ط خ أ ل ا ح ي حص ت

ك ن ك م ي ذئ دن ع ، NP لى ع ت ط ق س ة مز ح ي أ د ج ت م ل و ASR9K لى ع ل م ع ل ا ة سل ل ج ره ظ ت م ل ا ذ ا  
ASR9K ي ف ل م ع ل ا ة سل ل ج روه ظ م د ع ب ب س ة ف ر ع م ل ASR9K لى ع هذه ا ط خ أ ل ا ح ي حص ت ن ي ك م ت

- ي س اس أ ل ا م ا ظ ن ل ا ن م ة ي ط ا ي ت ح ل ا ع خ س ن debug l2vpn ea
- كرت ش م ل ل ك ل Debug l2vpn ه ي ج و ت ة د ا ع ل ا ي س اس أ ل ا م ا ظ ن ل ا
- <location> debug pm (API) ت ا ق ي ب ط ت ل ا ة ج م ر ب ة ج ا و ع ق و م
- <location> Debug pm ا ط خ ع ق و م
- <location> DEBUG ب ص ا خ ل ا API ا ط خ ع ق و م

## دي ع ص ت

ن م ضر ع ل ا ة ي ن ق ت ع ي م ح ت و Cisco TAC لى ل ل و ص و ل ا ي ج ر ي ف ، ة ل ك ش م ك ي د ل ل ا ز ت ال ت ن ا ك ا ذ ا  
ASR9K.

- ي ن ف ل ا م ع د ل ا كرت ش م راهظ ل
- show tech-support l2vpn

ةمچرتل هذه ل و ح

ةلأل تاي نقتل ن م ة و مچ م ادخت ساب دن تسمل اذ ه Cisco ت مچرت  
ملاعلاء ن أ عي مچ ي ف ن ي م دخت سمل ل معد ي و تح م مي دقت ل ة ي رش ب ل و  
امك ة ق ي قد ن و ك ت ن ل ة ي ل أ ة مچرت ل ض ف أ ن أ ة ظ حال م ي ج ر ي . ة ص ا خ ل م ه ت غ ل ب  
Cisco ي ل خ ت . ف ر ت ح م مچرت م ا ه م د ق ي ي ت ل ا ة ي ف ا ر ت ح ا ل ا ة مچرت ل ا ع م ل ا ح ل ا و ه  
ي ل ا م ا د ع و ج ر ل ا ب ي ص و ت و ت ا مچرت ل ا ه ذ ه ة ق د ن ع ا ه ت ي ل و ئ س م Cisco  
Systems (رف و ت م ط بار ل ا) ي ل ص أ ل ا ي ز ي ل ج ن ا ل ا دن تسمل ا