

在ASR1k系列路由器上配置BDI上的PPPoE

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简介

本文档介绍如何使用网桥域接口(BDI)和vlan-range配置以太网点对点协议(PPPoE)服务器。

先决条件

要求

Cisco 建议您了解以下主题：

- 端到端第1层连接正常
- PPP和PPPoE的基础知识已经广为人知

使用的组件

本文档中的信息基于以下软件和硬件版本：

- HOST-1 - CISCO887G
- HOST-2 - CISCO887
- 交换机 — WS-C3560-24TS-S
- PPPoE服务器 — ASR1001-X

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。

配置

注意：使用[命令查找工具（仅限注册用户）](#)可获取有关本部分所使用命令的详细信息。

主机1

```
!  
interface FastEthernet0  
  switchport access vlan 100  
  no ip address  
end  
  
!  
  
interface Vlan100  
  no ip address  
  pppoe enable group global  
  pppoe-client dial-pool-number 1  
end  
  
!  
  
interface Dialer1  
  ip address negotiated  
  encapsulation ppp  
  dialer pool 1  
  ppp chap hostname dsl  
  ppp chap password 0 dsl  
end
```

主机2

```
!  
  
interface FastEthernet0  
  switchport access vlan 200  
  no ip address  
end  
  
!  
  
!  
interface Vlan200  
  no ip address  
  pppoe enable group global  
  pppoe-client dial-pool-number 1  
end  
  
!  
  
!  
interface Dialer1  
  ip address negotiated  
  encapsulation ppp  
  dialer pool 1  
  ppp chap hostname dsl  
  ppp chap password 0 dsl  
end
```

交换机

```
SWITCH#sh cdp neighbors
```

Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone,
D - Remote, C - CVTA, M - Two-port Mac Relay

Device ID	Local Infrfce	Holdtme	Capability	Platform	Port ID
SERVER	Gig 0/1	130	R I	ASR1001-X	Gig 0/0/0
HOST-1	Fas 0/2	141	R B S I	887G	Fas 0
HOST-2	Fas 0/1	167	R B S I	887	Fas 0

```
!  
interface FastEthernet0/2  
  switchport access vlan 100  
end  
  
!  
interface FastEthernet0/1  
  switchport access vlan 200  
end  
  
!  
!  
interface GigabitEthernet0/1  
  switchport trunk encapsulation dot1q  
  switchport trunk allowed vlan 100,200  
  switchport mode trunk  
end
```

PPPoE服务器

```
!  
username dsl password 0 dsl  
  
!  
bba-group pppoe global  
  virtual-template 1  
!  
interface GigabitEthernet0/0/0  
  no ip address  
  negotiation auto  
  cdp enable  
  service instance 100 ethernet  
    encapsulation dot1q 100 etype pppoe-all  
    rewrite ingress tag pop 1 symmetric  
    bridge-domain 100  
  !  
  service instance 200 ethernet  
    encapsulation dot1q 200 etype pppoe-all  
    rewrite ingress tag pop 1 symmetric  
    bridge-domain 200  
  !  
!  
  
interface Virtual-Template1  
  ip unnumbered Loopback0  
  peer default ip address pool POOL  
  ppp authentication chap  
  !
```

```

interface BDI100
  no ip address
  pppoe enable group global
!
interface BDI200
  no ip address
  pppoe enable group global
!
interface Loopback0
  ip address 192.168.10.1 255.255.255.255
end

!
ip local pool POOL 192.168.1.1 192.168.1.100

```

或者，您可以配置vlan-range，如图所示：

```

!
interface GigabitEthernet0/0/0
  no ip address
  negotiation auto
  service instance 100 ethernet
  encapsulation default
  bridge-domain 1
!
end

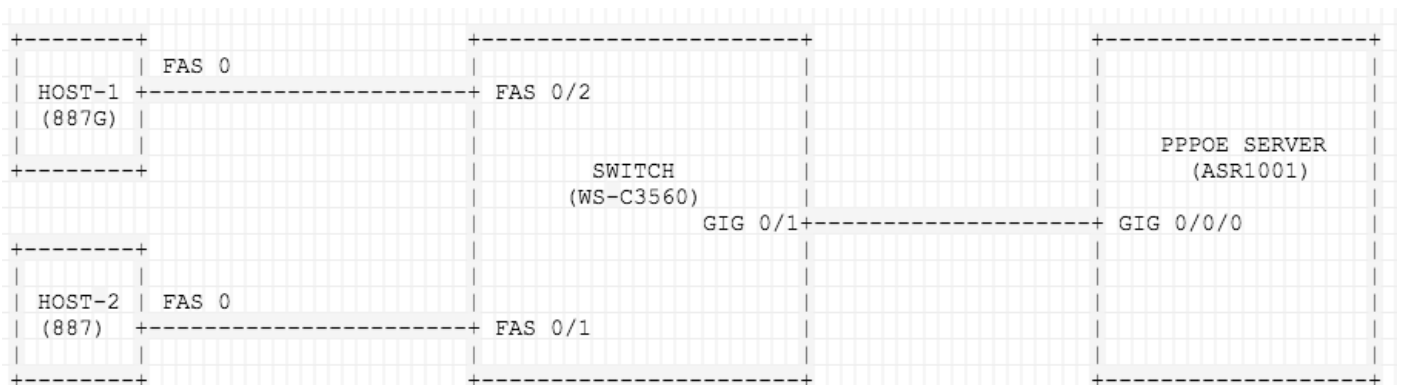
```

```

!
interface BDI1
  no ip address
  vlan-range dot1q 1 4094
  pppoe enable group global
!
end

```

网络图



验证

使用本部分可确认配置能否正常运行。

在HOST-1上

```
[HOST-1#show pppoe session
1 client session
```

Uniq ID	PPPoE SID	RemMAC LocMAC	Port	VT	VA VA-st Vi2	State Type
N/A	5	00a2.eee6.663f c471.fe93.d112	Vl100	Di1	Vi2	UP

```
HOST-1#show ip interface brief | exclude un
```

Interface	IP-Address	OK?	Method	Status	Protocol
Dialer1	192.168.1.4	YES	IPCP	up	up

```
HOST-1#show caller ip
```

Line	User	IP Address	Local Number	Remote Number	<->
Vi2	SERVER	192.168.10.1	-	<unknown phone	in

```
HOST-1#ping 192.168.10.1
```

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

```
Sending 5, 100-byte ICMP Echos to 192.168.10.1, timeout is 2 seconds:
```

```
!!!!!
```

```
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/1/4 ms
```

```
HOST-1#show ppp interface virtual-Access 2
```

```
PPP Serial Context Info
```

```
-----
```

```
Interface      : Vi2
PPP Serial Handle: 0x1F000003
PPP Handle     : 0xB2000003
SSS Handle     : 0x80000004
AAA ID        : 24
Access IE     : 0xA7000003
SHDB Handle   : 0x0
State         : Up
Last State    : Binding
Last Event    : LocalTerm
```

```
PPP Session Info
```

```
-----
```

```
Interface      : Vi2
PPP ID         : 0xB2000003
Phase          : UP
Stage          : Local Termination
Peer Name      : SERVER
Peer Address   : 192.168.10.1
Control Protocols: LCP[Open] IPCP[Open] CDPCP[Stopped]
Session ID     : 3
AAA Unique ID  : 24
SSS Manager ID : 0x80000004
SIP ID        : 0x1F000003
PPP_IN_USE     : 0x11
```

```
Vi2 LCP: [Open]
```

```
Our Negotiated Options
```

```
Vi2 LCP: MagicNumber 0x7735647E (0x05067735647E)
```

```
Peer's Negotiated Options
```

```
Vi2 LCP: MRU 1500 (0x010405DC)
Vi2 LCP: AuthProto CHAP (0x0305C22305)
Vi2 LCP: MagicNumber 0xA7A011AC (0x0506A7A011AC)
```

```
Vi2 IPCP: [Open]
Our Negotiated Options
Vi2 IPCP: Address 192.168.1.5 (0x0306C0A80105)
Peer's Negotiated Options
Vi2 IPCP: Address 192.168.10.1 (0x0306C0A80A01)
```

在HOST-2上

```
HOST-2#show pppoe session
1 client session
```

Uniq ID	PPPoE SID	RemMAC LocMAC	Port	VT	VA VA-st	State Type
N/A	6	00a2.eee6.663f e8b7.4886.b8ea	Vl200	Di1	Vi2 UP	UP

```
HOST-2#show ip interface brief | exclude un
Interface IP-Address OK? Method Status Protocol
Dialer1 192.168.1.6 YES IPCP up up
```

```
HOST-2#show caller ip
Line User IP Address Local Number Remote Number <->
Vi2 SERVER 192.168.10.1 - <unknown phone in
```

```
HOST-2#ping 192.168.10.1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.10.1, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/1/4 ms
```

```
HOST-2#show ppp interface virtual-Access 2
PPP Serial Context Info
```

```
-----
Interface : Vi2
PPP Serial Handle: 0x7B00000A
PPP Handle : 0xA000000A
SSS Handle : 0x4C00000B
AAA ID : 68
Access IE : 0x1D00000A
SHDB Handle : 0x0
State : Up
Last State : Binding
Last Event : LocalTerm
```

```
PPP Session Info
```

```
-----
Interface : Vi2
PPP ID : 0xA000000A
Phase : UP
Stage : Local Termination
Peer Name : SERVER
Peer Address : 192.168.10.1
```

```
Control Protocols: LCP[Open] IPCP[Open] CDPCP[Stopped]
Session ID       : 10
AAA Unique ID   : 68
SSS Manager ID  : 0x4C00000B
SIP ID         : 0x7B00000A
PPP_IN_USE     : 0x11
```

```
Vi2 LCP: [Open]
Our Negotiated Options
Vi2 LCP:   MagicNumber 0x421AC8AB (0x0506421AC8AB)
Peer's Negotiated Options
Vi2 LCP:   MRU 1500 (0x010405DC)
Vi2 LCP:   AuthProto CHAP (0x0305C22305)
Vi2 LCP:   MagicNumber 0xA7A0942C (0x0506A7A0942C)
```

```
Vi2 IPCP: [Open]
Our Negotiated Options
Vi2 IPCP:   Address 192.168.1.6 (0x0306C0A80106)
Peer's Negotiated Options
Vi2 IPCP:   Address 192.168.10.1 (0x0306C0A80A01)
```

在交换机上

```
SWITCH#show vlan brief
```

VLAN Name	Status	Ports
1 default	active	Fa0/4, Fa0/5, Fa0/6, Fa0/7 Fa0/8, Fa0/9, Fa0/10, Fa0/11 Fa0/12, Fa0/13, Fa0/14, Fa0/15 Fa0/16, Fa0/17, Fa0/18, Fa0/19 Fa0/20, Fa0/21, Fa0/22, Fa0/23 Fa0/24, Gi0/2
11 VLAN0011	active	
12 VLAN0012	active	
13 VLAN0013	active	
100 VLAN0100	active	Fa0/2
200 VLAN0200	active	Fa0/1

```
SWITCH#Show interface trunk
```

Port	Mode	Encapsulation	Status	Native vlan
Gi0/1	on	802.1q	trunking	1

Port	Vlans allowed on trunk
Gi0/1	100,200

Port	Vlans allowed and active in management domain
Gi0/1	100,200

Port	Vlans in spanning tree forwarding state and not pruned
Gi0/1	100,200

在PPPoE服务器上

```
SERVER#show pppoe session
      2 sessions in LOCALLY_TERMINATED (PTA) State
      2 sessions total
```

Uniq ID	PPPoE SID	RemMAC LocMAC	Port	VT	VA VA-st	State Type
5	5	c471.fe93.d112 00a2.eee6.663f	BD100	1	Vi2.2 UP	PTA
6	6	e8b7.4886.b8ea 00a2.eee6.663f	BD200	1	Vi2.1 UP	PTA

```
SERVER#show caller ip
```

Line	User	IP Address	Local Number	Remote Number	<->
Vi2.1	dsl	192.168.1.6	-	-	in
Vi2.2	dsl	192.168.1.5	-	-	in

```
SERVER#show ip local pool POOL
```

Pool	Begin	End	Free	In use
POOL	192.168.1.1	192.168.1.100	98	2

```
Available addresses:
```

```
192.168.1.7
192.168.1.8
192.168.1.9
```

```
.....
```

```
.....
```

使用“vlan-range”时，请注意“Port”中的更改：

```
SERVER#show pppoe session
      2 sessions in LOCALLY_TERMINATED (PTA) State
      2 sessions total
```

Uniq ID	PPPoE SID	RemMAC LocMAC	Port	VT	VA VA-st	State Type
7	7	c471.fe93.d112 00a2.eee6.663f	BD1 VLAN: 100	1	Vi2.1 UP	PTA
8	8	e8b7.4886.b8ea 00a2.eee6.663f	BD1 VLAN: 200	1	Vi2.2 UP	PTA

```
SERVER#show caller ip
```

Line	User	IP Address	Local Number	Remote Number	<->
Vi2.1	dsl	192.168.1.7	-	-	in
Vi2.2	dsl	192.168.1.8	-	-	in

故障排除

本部分提供了可用于对配置进行故障排除的信息。

这些调试有助于排除PPP/PPPoE故障。

- debug pppoe events
- debug pppoe errors

- debug ppp negotiation

相关信息

- [CSR 1000V上基于BDI的PPPoE](#)
- [增强错误 — BDI上的PPPoE终端和ASR1k上的vlan-range](#)
- [技术支持和文档 - Cisco Systems](#)