

Configurazione di PPPoE over BDI sui router serie ASR1k

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Introduzione

In questo documento viene descritto come configurare il server PPPoE (Point-to-Point Protocol over Ethernet) con l'interfaccia BDI (Bridge Domain Interface) e la gamma vlan.

Prerequisiti

Requisiti

Cisco raccomanda la conoscenza dei seguenti argomenti:

- Connettività end-to-end di livello 1 ottimale
- I concetti fondamentali di PPP e PPPoE sono ben compresi

Componenti usati

Le informazioni fornite in questo documento si basano sulle seguenti versioni software e hardware:

- HOST-1 - CISCO887G
- HOST-2 - CISCO887
- SWITCH - WS-C3560-24TS-S
- SERVER PPPoE - ASR1001-X

Le informazioni discusse in questo documento fanno riferimento a dispositivi usati in uno specifico ambiente di emulazione. Su tutti i dispositivi menzionati nel documento la configurazione è stata ripristinata ai valori predefiniti. Se la rete è operativa, valutare attentamente eventuali conseguenze derivanti dall'uso dei comandi.

Configurazione

Nota: per ulteriori informazioni sui comandi menzionati in questa sezione, usare lo [strumento di ricerca dei comandi \(solo utenti registrati\)](#).

HOST-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
```

HOST-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
```

!

SWITCH

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 Intrfce | 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
```

!

SERVER PPPoE

!

```
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

```

In alternativa, è possibile configurare 'vlan-range' come mostrato:

```

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

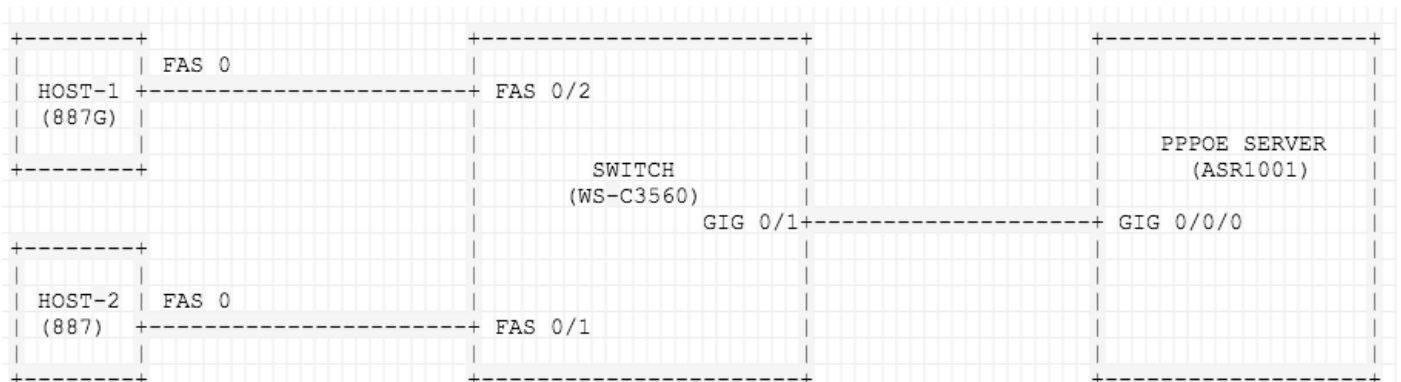
```

```

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

```

Esempio di rete



Verifica

Fare riferimento a questa sezione per verificare che la configurazione funzioni correttamente.

Su HOST-1

```
[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 : 0x8000004
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)

Su HOST-2

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)

INTERRUZIONE ON

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 | | | |

Sul server PPPoE

```
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
```

```
.....
```

```
.....
```

Quando si usa 'vlan-range', si noti la modifica in 'Port':

```
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 |

Risoluzione dei problemi

Le informazioni contenute in questa sezione permettono di risolvere i problemi relativi alla configurazione.

Questi debug saranno utili per risolvere i problemi relativi a PPP/PPPoE.

- debug di eventi pppoe

- errori debug pppoe
- negoziazione ppp di debug

Informazioni correlate

- [PPPoE over BDI su CISCO CSR 1000V](#)
- [Miglioramento del bug - Terminazione PPPoE su BDI e vlan-range su ASR1k](#)
- [Documentazione e supporto tecnico – Cisco Systems](#)