Ejemplo de configuración - Aplicación MUX Inversa usando PPP Multilink

Contenido

Introducción

En algunos entornos, puede ser necesario agrupar varios links seriales para actuar como un único link con ancho de banda agregado. Este documento describe cómo configurar routers Cisco 4500 para agrupar cuatro interfaces seriales mediante una plantilla de interfaz de plantilla virtual.

Esta configuración puede utilizarse para los routers conectados sobre líneas arrendadas o routers que tienen la Unidad de servicio de canales/Unidad de servicio de datos (CSU/DSU). Puede agregar funciones adicionales a esta configuración en función de sus necesidades.

Prerequisites

Requirements

No hay requisitos específicos para este documento.

Componentes Utilizados

La información que contiene este documento se basa en las versiones de software y hardware indicadas a continuación.

- Routers Cisco 4500 en un entorno de laboratorio con configuraciones despejadas.
- Cisco IOS® versión 12.2(10b) se estaba ejecutando en ambos routers.

La información que se presenta en este documento se originó a partir de dispositivos dentro de un ambiente de laboratorio específico. All of the devices used in this document started with a cleared (default) configuration. Si la red está funcionando, asegúrese de haber comprendido el impacto que puede tener un comando antes de ejecutarlo.

Productos Relacionados

Esta configuración también puede ser usada con las siguientes versiones de hardware y software.

- Dos routers cualesquiera con cuatro interfaces seriales cada uno.
- Se pueden utilizar las interfaces seriales WIC-1T y WIC-2T.

Convenciones

Para obtener más información sobre las convenciones del documento, consulte Convenciones de Consejos Técnicos de Cisco.
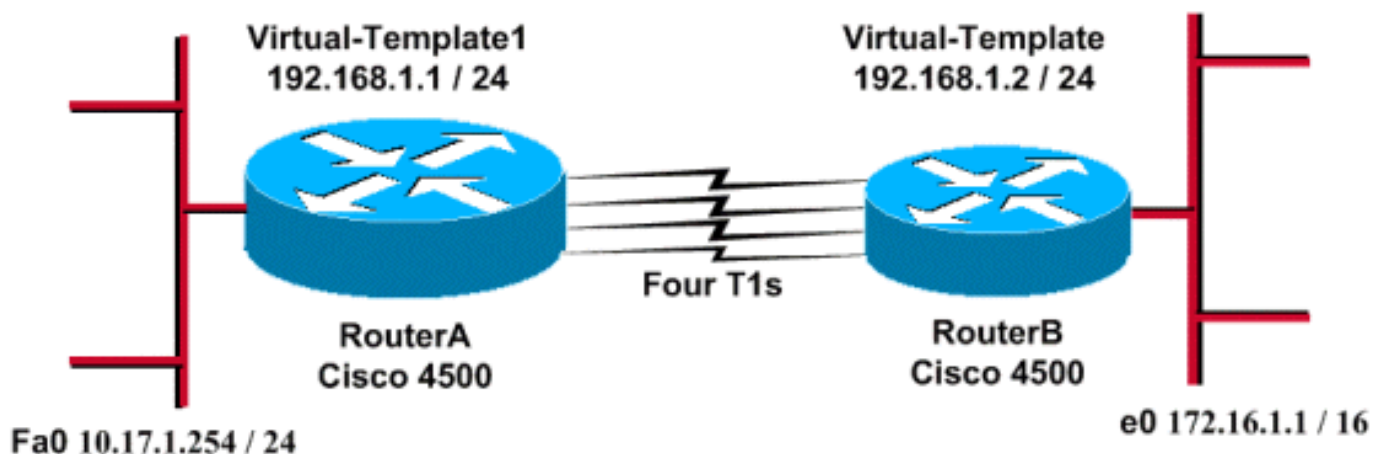
Configurar

En esta sección encontrará la información para configurar las funciones descritas en este documento.

Nota: Para encontrar información adicional sobre los comandos usados en este documento, utilice la Command Lookup Tool (sólo clientes registrados) .

Diagrama de la red

Este documento utiliza la instalación de red que se muestra en el siguiente diagrama.

Configuraciones

Esta configuración fue probada utilizando la versión 12.2(10b) del software Cisco IOS en routers de la serie 4500. Los mismos conceptos de configuración se aplican a una topología de router similar u otras versiones de Cisco IOS.

Este documento usa las configuraciones detalladas a continuación.

RouterA

```
version 12.2
!
hostname RouterA
!
!
username RouterB password xxx
ip subnet-zero
multilink virtual-template 1
!
interface loopback 0
ip address 192.168.1.1 255.255.255.0
!
interface Virtual-Template1
 ip unnumbered loopback0
 ppp authentication chap
 ppp multilink
!
interface Serial0
 no ip address
 encapsulation ppp
 no fair-queue
 ppp multilink
 pulse-time 3
!
interface Serial1
 no ip address
 encapsulation ppp
 no fair-queue
 ppp multilink
 pulse-time 3
!
interface Serial2
 no ip address
 encapsulation ppp
 no fair-queue
 ppp multilink
 pulse-time 3
!
interface Serial3
 no ip address
 encapsulation ppp
 no fair-queue
 ppp multilink
 pulse-time 3
!
interface FastEthernet0
 ip address 10.17.1.254 255.255.255.0
!
router rip
network 10.0.0.0
network 192.168.1.0
!
end
```

RouterB

```
version 12.2
!
```

```
hostname RouterB
!
username RouterA password xxx
ip subnet-zero
multilink virtual-template 1
!
interface loopback 0
ip address 192.168.1.2 255.255.255.0
!
!
interface Virtual-Template1
 ip unnumbered loopback0
 ppp authentication chap
 ppp multilink
!
interface Serial0
 no ip address
 encapsulation ppp
 no fair-queue
 ppp multilink
 pulse-time 3
!
interface Serial1
 no ip address
 encapsulation ppp
 no fair-queue
 ppp multilink
 pulse-time 3
!
interface Serial2
 no ip address
 encapsulation ppp
 no fair-queue
 ppp multilink
 pulse-time 3
!
interface Serial3
 no ip address
 encapsulation ppp
 no fair-queue
 ppp multilink
 pulse-time 3
!
interface Ethernet0
 ip address 172.16.1.1 255.255.0.0
!
router rip
network 172.16.0.0
network 192.168.1.0
!
end
```

Configure lo siguiente para implementar la configuración anterior:

- plantilla virtual multilink
- interface virtual-template
- Multilink PPP en cada una de las interfaces seriales en las que debe realizarse el agrupamiento.
- Un RIP como protocolo de ruteo IP

El loopback 0 de la interfaz se configura para que nunca falle, y **ip unnumbered loopback 0** mejora el agrupamiento de más de cinco interfaces seriales con la misma dirección IP.

Cuando todas las interfaces seriales están activas y se envía tráfico de usuario, el PPP de links múltiples crea una interfaz de acceso virtual y se lleva a cabo la negociación PPP. La configuración para esta interfaz de acceso virtual está clonada de la plantilla virtual. La cantidad de interfaces seriales que están activas se agrupan en esta interfaz de acceso virtual y se crea un ancho de banda adicional.

Verificación

En esta sección encontrará información que puede utilizar para confirmar que su configuración esté funcionando correctamente.

La herramienta [Output Interpreter](#) (sólo para clientes registrados) permite utilizar algunos comandos "show" y ver un análisis del resultado de estos comandos.

- show ip route
- show ip rip database
- show ppp miltilink
- show interface virtual-access 1

```
RouterA#show ip route

   Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
   D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
   N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
   E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
   i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
   * - candidate default, U - per-user static route, o - ODR
   P - periodic downloaded static route

Gateway of last resort is not set

R 172.16.0.0/16 [120/1] via 192.168.1.2, 00:00:19, Virtual-Access1
   10.0.0.0/24 is subnetted, 1 subnets
C 10.17.1.0 is directly connected, FastEthernet0
   192.168.1.0/24 is variably subnetted, 2 subnets, 2 masks
C 192.168.1.0/24 is directly connected, Loopback0
C 192.168.1.2/32 is directly connected, Virtual-Access1

RouterA#show ip route connected
     10.0.0.0/24 is subnetted, 1 subnets
C       10.17.1.0 is directly connected, FastEthernet0
     192.168.1.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.1.0/24 is directly connected, Loopback0
C       192.168.1.2/32 is directly connected, Virtual-Access1

RouterB#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

C 172.16.0.0/16 is directly connected, Ethernet0
```

```
R 10.0.0.0/8 [120/1] via 192.168.1.1, 00:00:18, Virtual-Access1
   192.168.1.0/24 is variably subnetted, 2 subnets, 2 masks
C 192.168.1.1/32 is directly connected, Virtual-Access1
C 192.168.1.0/24 is directly connected, Loopback0


RouterB#show ip route connected
C    172.16.0.0/16 is directly connected, Ethernet0
     192.168.1.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.1.1/32 is directly connected, Virtual-Access1
C       192.168.1.0/24 is directly connected, Loopback0


RouterA#show ip rip database
10.0.0.0/8    auto-summary
10.17.1.0/24    directly connected, FastEthernet0
172.16.0.0/16    auto-summary
172.16.0.0/16
    [1] via 192.168.1.2, 00:00:34, Virtual-Access1
192.168.1.0/24    auto-summary
192.168.1.0/24    directly connected, Loopback0
192.168.1.2/32    directly connected, Virtual-Access1


RouterB#show ip rip database
10.0.0.0/8    auto-summary
10.0.0.0/8
    [1] via 192.168.1.1, 00:00:13, Virtual-Access
1172.16.0.0/16    auto-summary
172.16.0.0/16    directly connected, Ethernet0
192.168.1.0/24    auto-summary
192.168.1.0/24    directly connected, Loopback0
192.168.1.1/32    directly connected, Virtual-Access1


RouterA#show ppp multilink
Virtual-Access1, bundle name is RouterB
Bundle up for 17:01:59
0 lost fragments, 0 reordered, 0 unassigned
0 discarded, 0 lost received, 1/255 load
0xD3C received sequence, 0x1180 sent sequence
  Member links: 4 (max not set, min not set)
    Serial0, since 17:01:59, last rcvd seq 000D38
    Serial1, since 17:01:50, last rcvd seq 000D39
    Serial2, since 17:01:46, last rcvd seq 000D3A
    Serial3, since 17:01:41, last rcvd seq 000D3B


RouterB#show ppp multilink

Virtual-Access1, bundle name is RouterA
  Bundle up for 12:47:33
  0 lost fragments, 0 reordered, 0 unassigned
  0 discarded, 0 lost received, 1/255 load
  0x1186 received sequence, 0xD40 sent sequence
  Member links: 4 (max not set, min not set)
    Serial0, since 12:47:33, last rcvd seq 001184
    Serial1, since 12:47:27, last rcvd seq 001185
    Serial2, since 12:47:23, last rcvd seq 001182
    Serial3, since 12:47:20, last rcvd seq 001183



RouterA#show interface virtual-access 1
Virtual-Access1 is up, line protocol is up
  Hardware is Virtual Access interface
  Interface is unnumbered. Using address of Loopback0 (192.168.1.1)
  MTU 1500 bytes, BW 6176 Kbit, DLY 100000 usec,
     reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation PPP, loopback not set
```

```
    Keepalive set (10 sec)
    DTR is pulsed for 5 seconds on reset
    LCP Open, multilink Open
    Open: IPCP
    Last input 00:00:00, output never, output hang never
    Last clearing of "show interface" counters 17:05:41
    Queueing strategy: fifo
    Output queue 0/40, 0 drops; input queue 0/75, 0 drops
    5 minute input rate 0 bits/sec, 0 packets/sec
    5 minute output rate 0 bits/sec, 0 packets/sec
        1711 packets input, 163898 bytes, 0 no buffer
        Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
        0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
        2256 packets output, 211897 bytes, 0 underruns
        0 output errors, 0 collisions, 0 interface resets
        0 output buffer failures, 0 output buffers swapped out
        0 carrier transitions

RouterB#show interface virtual-access 1
Virtual-Access1 is up, line protocol is up
  Hardware is Virtual Access interface
  Interface is unnumbered. Using address of Loopback0 (192.168.1.2)
  MTU 1500 bytes, BW 6176 Kbit, DLY 100000 usec,
      reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation PPP, loopback not set
  Keepalive set (10 sec)
  DTR is pulsed for 5 seconds on reset
  LCP Open, multilink Open
  Open: IPCP
  Last input 00:00:20, output never, output hang never
  Last clearing of "show interface" counters 12:54:17
  Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
  Queueing strategy: fifo
  Output queue :0/40 (size/max)
  5 minute input rate 0 bits/sec, 0 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
      2256 packets input, 216460 bytes, 0 no buffer
      Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
      0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
      1714 packets output, 160624 bytes, 0 underruns
      0 output errors, 0 collisions, 0 interface resets
      0 output buffer failures, 0 output buffers swapped out
      0 carrier transitions
```

Troubleshoot

En esta sección encontrará información que puede utilizar para solucionar problemas de configuración.

Comandos para resolución de problemas

La herramienta Output Interpreter (sólo para clientes registrados) permite utilizar algunos comandos "show" y ver un análisis del resultado de estos comandos.

Nota: Antes de ejecutar **comandos debug**, consulte Información Importante sobre Comandos Debug.

- **debug ppp negotiation** - Para ver si un cliente está pasando la negociación PPP; este

comando se utiliza para verificar la negociación de dirección.

- **debug ppp autentication – Para ver si un cliente se autentica correctamente.** Si está utilizando una versión de software del IOS de Cisco anterior a 11.2, utilice el comando **debug ppp chap** en su lugar.
- **debug ppp error** - Para mostrar los errores de protocolo y las estadísticas de error asociadas con la negociación y operación de conexión PPP.
- **debug vtemplate – Para visualizar la clonación de plantilla virtual para formar una interfaz de acceso virtual.**
- **debug ppp multilink events: se utiliza para observar la depuración de los eventos de enlaces múltiples del PPP.** Muestra información sobre eventos que afectan a grupos de links múltiples.
- **show ppp multilink** - para ver a los miembros del agrupamiento de enlaces múltiples.

Los siguientes resultados se obtuvieron de los routers Cisco 4500. Presentan los routers que establecen una conexión de links múltiples PPP.

```
RouterA#debug vtemplate
  Virtual Template debugging is on

*Dec  1 17:24:16.519: Vi1 VTEMPLATE: Reuse Vi1, recycle queue size 0
*Dec  1 17:24:16.519: Vi1 VTEMPLATE: Set default settings with ip unnumbered
*Dec  1 17:24:16.539: Vi1 VTEMPLATE: Hardware address 00d0.bbfa.f579
*Dec  1 17:24:16.543: Vi1 VTEMPLATE: Has a new cloneblk vtemplate,
now it has vtemplate
*Dec  1 17:24:16.543: Vi1 VTEMPLATE: ********** CLONE VACCESS1 **********
*Dec  1 17:24:16.543: Vi1 VTEMPLATE: Clone from Virtual-Template1
interface Virtual-Access1
default ip address
no ip address
encap ppp
ip unnumbered loopback0
end

*Dec 1 17:24:16.595: %LINK-3-UPDOWN:
Interface Virtual-Access1, changed state to up
*Dec 1 17:24:17.515: %LINEPROTO-5-UPDOWN:
Line protocol on Interface Serial0, changed state to up
*Dec 1 17:24:17.595: %LINEPROTO-5-UPDOWN:
Line protocol on Interface Virtual-Access1, changed state to up

RouterA#debug ppp negotiation
  PPP protocol negotiation debugging is on

Dec 11 19:39:14.523: %LINK-5-CHANGED: Interface Serial0, changed state to reset
Dec 11 19:39:14.523: Se0 LCP: State is Closed
Dec 11 19:39:14.627: %SYS-5-CONFIG_I: Configured from console by console
Dec 11 19:39:16.523: %LINK-3-UPDOWN: Interface Serial0, changed state to up
Dec 11 19:39:16.523: Se0 PPP: Treating connection as a dedicated line
Dec 11 19:39:16.523: Se0 PPP: Phase is ESTABLISHING, Active Open [0 sess, 1 load]
Dec 11 19:39:16.523: Se0 LCP: O CONFREQ [Closed] id 25 len 24
Dec 11 19:39:16.523: Se0 LCP:    MagicNumber 0xD4CBA693 (0x0506D4CBA693)
Dec 11 19:39:16.523: Se0 LCP:    MRRU 1524 (0x110405F4)
Dec 11 19:39:16.523: Se0 LCP:    EndpointDisc 1 RouterA (0x130A01506F6D65726F6C)
Dec 11 19:39:16.535: Se0 LCP: I CONFREQ [REQsent] id 33 len 25
Dec 11 19:39:16.535: Se0 LCP:    MagicNumber 0x03200E36 (0x050603200E36)
Dec 11 19:39:16.535: Se0 LCP:    MRRU 1524 (0x110405F4)
Dec 11 19:39:16.539: Se0 LCP:    EndpointDisc 1 RouterB (0x130B0150756C6C69676E79)
Dec 11 19:39:16.539: Se0 LCP: O CONFACK [REQsent] id 33 len 25
Dec 11 19:39:16.539: Se0 LCP:    MagicNumber 0x03200E36 (0x050603200E36)
```

```
Dec 11 19:39:16.539: Se0 LCP:    MRRU 1524 (0x110405F4)
Dec 11 19:39:16.539: Se0 LCP:    EndpointDisc 1 RouterB (0x130B0150756C6C69676E79)
Dec 11 19:39:16.539: Se0 LCP: I CONFACK [ACKsent] id 25 len 24
Dec 11 19:39:16.539: Se0 LCP:    MagicNumber 0xD4CBA693 (0x0506D4CBA693)
Dec 11 19:39:16.539: Se0 LCP:    MRRU 1524 (0x110405F4)
Dec 11 19:39:16.543: Se0 LCP:    EndpointDisc 1 RouterA (0x130A01506F6D65726F6C)
Dec 11 19:39:16.543: Se0 LCP: State is Open
Dec 11 19:39:16.543: Se0 PPP: Phase is VIRTUALIZED [0 sess, 1 load]
Dec 11 19:39:16.555: Vi1 PPP: Phase is DOWN, Setup [0 sess, 1 load]
Dec 11 19:39:16.587: %LINK-3-UPDOWN: Interface Virtual-Access1, changed state to up
Dec 11 19:39:16.587: Vi1 PPP: Treating connection as a dedicated line
Dec 11 19:39:16.587: Vi1 PPP: Phase is ESTABLISHING, Active Open [0 sess, 1 load]
Dec 11 19:39:16.587: Vi1 LCP: O CONFREQ [Closed] id 1 len 29
Dec 11 19:39:16.587: Vi1 LCP:    AuthProto CHAP (0x0305C22305)
Dec 11 19:39:16.587: Vi1 LCP:    MagicNumber 0xD4CBA6D4 (0x0506D4CBA6D4)
Dec 11 19:39:16.587: Vi1 LCP:    MRRU 1524 (0x110405F4)
Dec 11 19:39:16.587: Vi1 LCP:    EndpointDisc 1 RouterA (0x130A01506F6D65726F6C)
Dec 11 19:39:16.587: Vi1 PPP: Phase is UP [0 sess, 1 load]
Dec 11 19:39:16.591: Vi1 IPCP: O CONFREQ [Closed] id 1 len 10
Dec 11 19:39:16.591: Vi1 IPCP:    Address 192.168.1.1 (0x0306C0A80101)
Dec 11 19:39:16.591: Vi1 MLP: Added first link Se0 to bundle RouterB
Dec 11 19:39:16.623: Vi1 IPCP: I CONFREQ [REQsent] id 1 len 10
Dec 11 19:39:16.623: Vi1 IPCP:    Address 192.168.1.2 (0x0306C0A80102)
Dec 11 19:39:16.623: Vi1 IPCP: O CONFACK [REQsent] id 1 len 10
Dec 11 19:39:16.623: Vi1 IPCP:    Address 192.168.1.2 (0x0306C0A80102)
Dec 11 19:39:16.623: Vi1 IPCP: I CONFACK [ACKsent] id 1 len 10
Dec 11 19:39:16.627: Vi1 IPCP:    Address 192.168.1.1 (0x0306C0A80101)
Dec 11 19:39:16.627: Vi1 IPCP: State is Open
Dec 11 19:39:16.627: Vi1 IPCP: Install route to 192.168.1.2
Dec 11 19:39:17.543: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0,
changed state to up
Dec 11 19:39:17.587: %LINEPROTO-5-UPDOWN:
Line protocol on Interface Virtual-Access1, changed state to up


RouterB#debug ppp negotiation
  PPP protocol negotiation debugging is on

Dec 11 19:38:08.975: Se0 LCP: I CONFREQ [Closed] id 25 len 24
Dec 11 19:38:08.975: Se0 LCP:    MagicNumber 0xD4CBA693 (0x0506D4CBA693)
Dec 11 19:38:08.975: Se0 LCP:    MRRU 1524 (0x110405F4)
Dec 11 19:38:08.975: Se0 LCP:    EndpointDisc 1 RouterA (0x130A01506F6D65726F6C)
Dec 11 19:38:08.975: Se0 LCP: Lower layer not up, Fast Starting
Dec 11 19:38:08.975: Se0 PPP: Treating connection as a dedicated line
Dec 11 19:38:08.979: Se0 PPP: Phase is ESTABLISHING, Active Open [0 sess, 1 load]
Dec 11 19:38:08.979: Se0 LCP: O CONFREQ [Closed] id 33 len 25
Dec 11 19:38:08.979: Se0 LCP:    MagicNumber 0x03200E36 (0x050603200E36)
Dec 11 19:38:08.979: Se0 LCP:    MRRU 1524 (0x110405F4)
Dec 11 19:38:08.979: Se0 LCP:    EndpointDisc 1 RouterB (0x130B0150756C6C69676E79)
Dec 11 19:38:08.979: Se0 LCP: O CONFACK [REQsent] id 25 len 24
Dec 11 19:38:08.979: Se0 LCP:    MagicNumber 0xD4CBA693 (0x0506D4CBA693)
Dec 11 19:38:08.979: Se0 LCP:    MRRU 1524 (0x110405F4)
Dec 11 19:38:08.979: Se0 LCP:    EndpointDisc 1 RouterA (0x130A01506F6D65726F6C)
Dec 11 19:38:08.979: %LINK-3-UPDOWN: Interface Serial0, changed state to up
Dec 11 19:38:08.987: Se0 LCP: I CONFACK [ACKsent] id 33 len 25
Dec 11 19:38:08.987: Se0 LCP:    MagicNumber 0x03200E36 (0x050603200E36)
Dec 11 19:38:08.987: Se0 LCP:    MRRU 1524 (0x110405F4)
Dec 11 19:38:08.987: Se0 LCP:    EndpointDisc 1 RouterB (0x130B0150756C6C69676E79)
Dec 11 19:38:08.987: Se0 LCP: State is Open
Dec 11 19:38:08.987: Se0 PPP: Phase is VIRTUALIZED [0 sess, 1 load]
Dec 11 19:38:08.999: Vi1 PPP: Phase is DOWN, Setup [0 sess, 1 load]
Dec 11 19:38:09.039: Se0 IPCP: Packet buffered while building MLP bundle interface
Dec 11 19:38:09.043: %LINK-3-UPDOWN: Interface Virtual-Access1, changed state to up
Dec 11 19:38:09.043: Vi1 PPP: Treating connection as a dedicated line
Dec 11 19:38:09.043: Vi1 PPP: Phase is ESTABLISHING, Active Open [0 sess, 1 load]
```

```
Dec 11 19:38:09.043: Vi1 LCP: O CONFREQ [Closed] id 1 len 30
Dec 11 19:38:09.043: Vi1 LCP:    AuthProto CHAP (0x0305C22305)
Dec 11 19:38:09.043: Vi1 LCP:    MagicNumber 0x03200E78 (0x050603200E78)
Dec 11 19:38:09.043: Vi1 LCP:    MRRU 1524 (0x110405F4)
Dec 11 19:38:09.043: Vi1 LCP:    EndpointDisc 1 RouterB (0x130B0150756C6C69676E79)
Dec 11 19:38:09.043: Vi1 PPP: Phase is UP [0 sess, 1 load]
Dec 11 19:38:09.043: Vi1 IPCP: O CONFREQ [Closed] id 1 len 10
Dec 11 19:38:09.043: Vi1 IPCP:    Address 192.168.1.2 (0x0306C0A80102)
Dec 11 19:38:09.047: Vi1 MLP: Added first link Se0 to bundle RouterA
Dec 11 19:38:09.047: Vi1 PPP: Pending ncpQ size is 1
Dec 11 19:38:09.047: Se0 IPCP: Redirect packet to Vi1
Dec 11 19:38:09.047: Vi1 IPCP: I CONFREQ [REQsent] id 1 len 10
Dec 11 19:38:09.047: Vi1 IPCP:    Address 192.168.1.1 (0x0306C0A80101)
Dec 11 19:38:09.047: Vi1 IPCP: O CONFACK [REQsent] id 1 len 10
Dec 11 19:38:09.047: Vi1 IPCP:    Address 192.168.1.1 (0x0306C0A80101)
Dec 11 19:38:09.051: Vi1 IPCP: I CONFACK [ACKsent] id 1 len 10
Dec 11 19:38:09.051: Vi1 IPCP:    Address 192.168.1.2 (0x0306C0A80102)
Dec 11 19:38:09.051: Vi1 IPCP: State is Open
Dec 11 19:38:09.051: Vi1 IPCP: Install route to 192.168.1.1
Dec 11 19:38:09.987: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0,
changed state to up
Dec 11 19:38:10.043: %LINEPROTO-5-UPDOWN:
Line protocol on Interface Virtual-Access1, changed state to up

RouterB#debug ppp multilink events
Multilink events debugging is on
Dec 11 19:41:30.239: %LINK-3-UPDOWN: Interface Serial0, changed state to up
Dec 11 19:41:30.243: Se0 MLP: Request add link to bundle
Dec 11 19:41:30.243: Se0 MLP: Adding link to bundle
Dec 11 19:41:30.255: Vi1 MLP: VP: Clone from Vtemplate 1 block=1
Dec 11 19:41:30.299: %LINK-3-UPDOWN: Interface Virtual-Access1, changed state to up
Dec 11 19:41:30.299: Vi1 MLP: Added first link Se0 to bundle RouterA
Dec 11 19:41:31.243: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0,
changed state to up
Dec 11 19:41:31.243: Se0 MLP: cdp packet forwarded to wrong interface
Dec 11 19:41:31.299: %LINEPROTO-5-UPDOWN:
Line protocol on Interface Virtual-Access1, changed state to up
```

Información Relacionada

- Visualización de las estadísticas de la persona que llama
- RFC 1717 PPP de links múltiples
- Configuración de DDR par a par con perfiles del marcador
- Páginas de soporte de la tecnología de WAN
- Soporte Técnico - Cisco Systems