

links múltiples mediante una plantilla virtual en dos interfaces seriales

Contenido

[Introducción](#)

[Prerequisites](#)

[Requirements](#)

[Componentes Utilizados](#)

[Productos Relacionados](#)

[Convenciones](#)

[Configurar](#)

[Diagrama de la red](#)

[Configuraciones](#)

[Verificación](#)

[Ejemplo de resultado del comando show](#)

[Troubleshoot](#)

[Recursos de resolución de problemas](#)

[Comandos para resolución de problemas](#)

[Ejemplo de resultado del comando debug](#)

[Información Relacionada](#)

Introducción

Multilink PPP (MLP) equilibra la carga en las interfaces del marcador, como por ejemplo, las interfaces de ISDN, sincrónica y asincrónica. MLP reparte los paquetes y envía los fragmentos a través de circuitos paralelos. De esta manera, MLP mejora la producción y reduce el tiempo de espera entre los sistemas. MLP proporciona un método para repartir, recombinar y establecer secuencias de datagramas a través de los links de datos lógicos múltiples. MLP permite que los paquetes se fragmenten y que los fragmentos se envíen a la vez a través de varios links punto a punto a la misma dirección remota.

Este documento ilustra una conexión Multilink entre interfaces seriales a través de la configuración de plantilla virtual.

Prerequisites

Requirements

No hay requisitos específicos para este documento.

Componentes Utilizados

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

- Versión 11.2 o más reciente del software IOS® de Cisco.
- Dos routers Cisco 2503, que tienen dos interfaces seriales WAN cada uno. Estos routers ejecutan Cisco IOS Software Release 12.2(7b).

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

[Productos Relacionados](#)

Esta configuración también se puede utilizar con las siguientes versiones de hardware y software.

- Dos routers cualesquiera que tengan dos interfaces seriales WAN. Puede utilizar WIC-1T, WIC-2T e interfaces seriales WAN fijas.

[Convenciones](#)

Consulte [Convenciones de Consejos Técnicos Cisco para obtener más información sobre las convenciones del documento.](#)

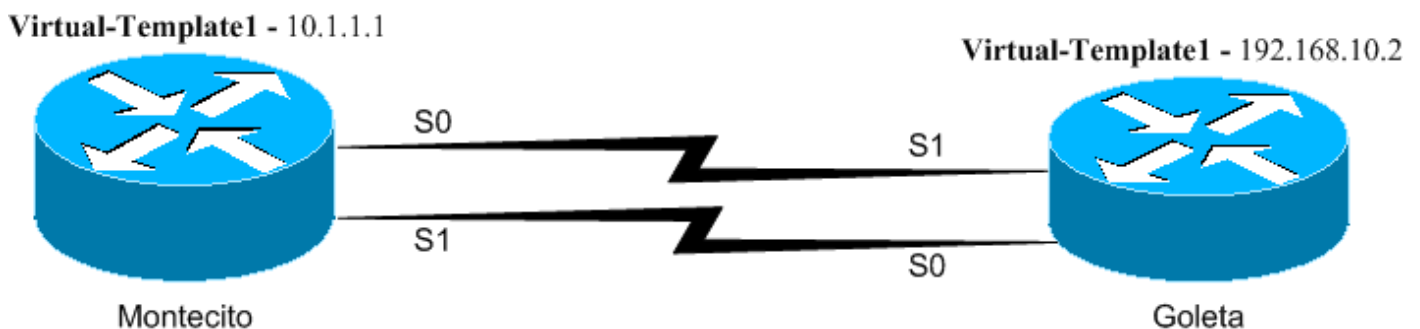
[Configurar](#)

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

Nota: Use la [Command Lookup Tool](#) (sólo [clientes registrados](#)) para obtener más información sobre los comandos utilizados en este documento.

[Diagrama de la red](#)

En este documento, se utiliza esta configuración de red:



Los routers Montecito y Goleta están adosados a través de las interfaces Serial0 y Serial1. Esta configuración utiliza una plantilla virtual en cada lado, el protocolo punto a punto (PPP) de enlaces múltiples y une y enruta IP e IPX entre los routers.

[Configuraciones](#)

En este documento, se utilizan estas configuraciones:

- [Montecito](#)
- [Goleta](#)

Montecito

```
Montecito#write terminal
Building configuration...
Current configuration : 945 bytes
!
version 12.2
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname Montecito
!
boot system flash c2500-d-1.122-7b.bin
no logging buffered
!
ip subnet-zero
no ip domain-lookup
!
!
multilink virtual-template 1
  !--- Applies the virtual interface template to the
  multilink bundle. !--- All multilink calls have virtual-
  access interfaces cloned !--- from virtual-template 1. !
ipx routing 0000.0c31.aac2 ! interface Loopback0 ip
address 10.1.1.1 255.0.0.0 ipx network BEEF ! interface
Ethernet0 no ip address shutdown ! ! !--- Virtual-
template is a logical interface that creates virtual
access !--- interfaces dynamically, and applies them to
physical serial interfaces. interface Virtual-Templatel
!--- Assumes the IP & IPX address of Loopback0. ip
unnumbered Loopback0 ipx ppp-client Loopback0 ppp
multilink !--- Enables Multilink PPP on the interface.
bridge-group 1 ! interface Serial0 no ip address
encapsulation ppp no ip route-cache no ip mroute-cache
no fair-queue !--- Enables Multilink PPP on the
interface. ppp multilink ! interface Serial1 no ip
address encapsulation ppp no ip route-cache no ip
mroute-cache no fair-queue !--- Enables Multilink PPP on
the interface. ppp multilink ! interface BRI0 no ip
address shutdown ! no ip classless ! bridge 1 protocol
ieee ! line con 0 line aux 0 line vty 0 4 login ! end
```

Goleta

```
Goleta#write terminal
Building configuration...
Current configuration : 960 bytes
version 12.2
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname Goleta
!
!
```

```

ip subnet-zero
no ip domain-lookup
!
!
!--- Applies the virtual interface template to the
multilink bundle. !--- Skip this step for ISDN or dialer
interfaces. multilink virtual-template 1 ipx routing
0000.0c47.4e9a ! ! ! interface Loopback0 ip address
192.168.10.2 255.255.255.0 ipx network BEEF ! interface
Ethernet0 no ip address shutdown ! !--- Virtual-template
is a logical interface that Creates virtual access !---
interfaces dynamically and applies them to physical
serial interfaces. interface Virtual-Templatel !---
Assumes the IP & IPX address of Loopback0. ip unnumbered
Loopback0 ipx ppp-client Loopback0 ! !--- Enables
Multilink PPP on the interface. ppp multilink bridge-
group 1 ! interface Serial0 no ip address encapsulation
ppp no fair-queue clockrate 1000000 ! !--- Enables
Multilink PPP on the interface. ppp multilink !
interface Serial11 no ip address encapsulation ppp no
fair-queue clockrate 1000000 ! !--- Enables Multilink
PPP on the interface. ppp multilink ! interface BRI0 no
ip address shutdown ! ip classless ! bridge 1 protocol
ieee ! line con 0 line aux 0 line vty 0 4 ! end

```

Verificación

Use esta sección para confirmar que su configuración funciona correctamente.

[La herramienta Output Interpreter Tool \(clientes registrados solamente\) \(OIT\) soporta ciertos comandos show.](#) Utilice la OIT para ver un análisis del resultado del comando show.

- **show ppp multilink:** muestra información sobre paquetes multilink que están activos. Utilice este comando para verificar la conexión multilink.
- **show interface virtual-access:** muestra información de estado, tráfico y configuración sobre una interfaz de acceso virtual específica.
- **show interface serial:** permite resolver cualquier problema con la interfaz serial

Ejemplo de resultado del comando show

Comandos show en Montecito después de que se realice la conexión

```

Montecito#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 (10.1.1.1)
MTU 1500 bytes, BW 3088 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: BRIDGECP, IPCP, IPXCP
Last input 00:00:00, output never, output hang never
Last clearing of "show interface" counters 00:02:09
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
22 packets input, 743 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
8 packets output, 124 bytes, 0 underruns
0 output errors, 0 collisions, 0 interface resets
0 output buffer failures, 0 output buffers swapped out
0 carrier transitions

Montecito#**show interface serial 0**

Serial0 is up, line protocol is up
Hardware is HD64570
MTU 1500 bytes, BW 1544 Kbit, DLY 20000 usec,
reliability 255/255, txload 1/255, rxload 1/255
Encapsulation PPP, loopback not set
Keepalive set (10 sec)
LCP Open, multilink Open
Last input 00:00:00, output 00:00:06, output hang never
Last clearing of "show interface" counters 02:04:30
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
3320 packets input, 107170 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
1483 packets output, 24622 bytes, 0 underruns
0 output errors, 0 collisions, 6 interface resets
0 output buffer failures, 0 output buffers swapped out
8 carrier transitions
DCD=up DSR=up DTR=up RTS=up CTS=up

Montecito#**show interface serial 1**

Serial1 is up, line protocol is up
Hardware is HD64570
MTU 1500 bytes, BW 1544 Kbit, DLY 20000 usec,
reliability 255/255, txload 1/255, rxload 1/255
Encapsulation PPP, loopback not set
Keepalive set (10 sec)
LCP Open, multilink Open
Last input 00:00:00, output 00:00:00, output hang never
Last clearing of "show interface" counters 02:04:32
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
3320 packets input, 107161 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
1482 packets output, 24646 bytes, 0 underruns
0 output errors, 0 collisions, 6 interface resets
0 output buffer failures, 0 output buffers swapped out
8 carrier transitions
DCD=up DSR=up DTR=up RTS=up CTS=up

Montecito#**show ppp multilink**

Virtual-Access1, bundle name is Goleta
Bundle up for 00:01:39
0 lost fragments, 0 reordered, 0 unassigned

```
0 discarded, 0 lost received, 1/255 load
0x3D received sequence, 0xB sent sequence
Member links: 2 (max not set, min not set)
Serial1, since 00:01:40, last rcvd seq 00003C
Serial0, since 00:01:39, last rcvd seq 00003B
```

```
Montecito#show bridge group
```

```
Bridge Group 1 is running the IEEE compatible Spanning Tree protocol
Port 10 (Virtual-Access1) of bridge group 1 is forwarding
Port 9 (Virtual-Templatel) of bridge group 1 is down
Montecito#
```

Comandos show en Goleta después de que se realice la conexión

```
Goleta#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 (192.168.10.2)
MTU 1500 bytes, BW 3088 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: BRIDGECP, IPCP, IPXCP
Last input 00:00:10, output never, output hang never
Last clearing of "show interface" counters 00:02:18
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
4 packets input, 52 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
28 packets output, 892 bytes, 0 underruns
0 output errors, 0 collisions, 0 interface resets
0 output buffer failures, 0 output buffers swapped out
0 carrier transitions
```

```
Goleta#show interface serial 0
```

```
Serial0 is up, line protocol is up
Hardware is HD64570
MTU 1500 bytes, BW 1544 Kbit, DLY 20000 usec,
reliability 255/255, txload 1/255, rxload 1/255
Encapsulation PPP, loopback not set
Keepalive set (10 sec)
LCP Open, multilink Open
Last input 01:52:28, output 00:00:00, output hang never
Last clearing of "show interface" counters 02:55:09
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
2364 packets input, 41972 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
4465 packets output, 134689 bytes, 0 underruns
0 output errors, 0 collisions, 148 interface resets
0 output buffer failures, 0 output buffers swapped out
294 carrier transitions
DCD=up DSR=up DTR=up RTS=up CTS=up
```

```
Goleta#show interface serial 1
Serial1 is up, line protocol is up
Hardware is HD64570
MTU 1500 bytes, BW 1544 Kbit, DLY 20000 usec,
reliability 255/255, txload 1/255, rxload 1/255
Encapsulation PPP, loopback not set
Keepalive set (10 sec)
LCP Open, multilink Open
Last input 01:52:38, output 00:00:00, output hang never
Last clearing of "show interface" counters 02:55:18
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
2366 packets input, 42030 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
4472 packets output, 134930 bytes, 0 underruns
0 output errors, 0 collisions, 147 interface resets
0 output buffer failures, 0 output buffers swapped out
289 carrier transitions
DCD=up DSR=up DTR=up RTS=up CTS=up
```

```
Goleta#sh ppp multilink
Virtual-Access1, bundle name is Montecito
Bundle up for 00:01:35
0 lost fragments, 0 reordered, 0 unassigned
0 discarded, 0 lost received, 1/255 load
0xB received sequence, 0x3B sent sequence
Member links: 2 (max not set, min not set)
Serial0, since 00:01:36, last rcvd seq 00000A
Serial1, since 00:01:35, last rcvd seq 000009
```

```
Goleta#show bridge group
Bridge Group 1 is running the IEEE compatible Spanning Tree protocol
Port 10 (Virtual-Access1) of bridge group 1 is forwarding
Port 9 (Virtual-Templatel) of bridge group 1 is down
```

[Troubleshoot](#)

Use esta sección para resolver problemas de configuración.

[Recursos de resolución de problemas](#)

Utilice estos recursos de resolución de problemas según sea necesario:

- [Resolución de problemas de línea serial](#)
- [Conexión adosada HDLC](#)
- Resolución de problemas de líneas alquiladas

[Comandos para resolución de problemas](#)

[La herramienta Output Interpreter Tool \(clientes registrados solamente\) \(OIT\) soporta ciertos comandos show.](#) Utilice la OIT para ver un análisis del resultado del comando show.

Nota: Consulte [Información Importante sobre Comandos Debug](#) antes de utilizar los comandos

debug.

- **debug ppp negotiation:** indica si un cliente pasa la negociación PPP. También verifica la negociación de dirección.
- **debug ppp authentication:** indica si un cliente pasa la autenticación. Utilice este comando si utiliza Cisco IOS Software Release 11.2 o versiones posteriores.
- **debug ppp chap:** indica si un cliente pasa la autenticación. Utilice este comando si utiliza una versión del software Cisco IOS anterior a la versión 11.2.
- **debug ppp error — Muestra los errores de protocolo y las estadísticas de error relacionadas con la negociación y operación de conexiones PPP.**
- **debug vtemplate:** permite ver qué configuraciones de plantilla virtual se utilizan.
- **debug vprofile:** permite ver qué opciones de configuración se aplican a la interfaz de acceso virtual.

[Ejemplo de resultado del comando debug](#)

A continuación se muestran algunos resultados de depuración para llamadas exitosas. Preste atención a las secciones en **negrita**. Compare el resultado que obtiene con el resultado que se muestra aquí:

[Depuraciones de PPP en Montecito](#)

```
Montecito#debug ppp negotiation
PPP protocol negotiation debugging is on
Montecito#
00:07:30: %LINK-3-UPDOWN: Interface Serial1, changed state to up
00:07:30: Se1 PPP: Treating connection as a dedicated line
00:07:30: Se1 PPP: Phase is ESTABLISHING, Active Open [0 sess, 2 load]
00:07:30: Se1 LCP: O CONFREQ [Closed] id 4 len 26
00:07:30: Se1 LCP:   MagicNumber 0x6063D57E (0x05066063D57E)
00:07:30: Se1 LCP:   MRRU 1524 (0x110405F4)
00:07:30: Se1 LCP:   EndpointDisc 1 Montecito (0x130C014D6F6E74656369746F)
00:07:30: Se1 LCP: I CONFREQ [REQsent] id 101 len 23
00:07:30: Se1 LCP:   MagicNumber 0x60944B81 (0x050660944B81)
00:07:30: Se1 LCP:   MRRU 1524 (0x110405F4)
00:07:30: Se1 LCP:   EndpointDisc 1 Goleta (0x130901476F6C657461)
00:07:30: Se1 LCP: O CONFACK [REQsent] id 101 len 23
00:07:30: Se1 LCP:   MagicNumber 0x60944B81 (0x050660944B81)
00:07:30: Se1 LCP:   MRRU 1524 (0x110405F4)
00:07:30: Se1 LCP:   EndpointDisc 1 Goleta (0x130901476F6C657461)
00:07:30: Se1 LCP: I CONFACK [ACKsent] id 4 len 26
00:07:30: Se1 LCP:   MagicNumber 0x6063D57E (0x05066063D57E)
00:07:30: Se1 LCP:   MRRU 1524 (0x110405F4)
00:07:30: Se1 LCP:   EndpointDisc 1 Montecito (0x130C014D6F6E74656369746F)
00:07:30: Se1 LCP: State is Open
00:07:30: Se1 PPP: Phase is VIRTUALIZED [0 sess, 1 load]
00:07:31: Vi1 PPP: Phase is DOWN, Setup [0 sess, 0 load]
00:07:31: Vi1 PPP: Phase is ESTABLISHING [0 sess, 0 load]
00:07:31: %LINK-3-UPDOWN: Interface Serial0, changed state to up
00:07:31: Se0 PPP: Treating connection as a dedicated line
00:07:31: Se0 PPP: Phase is ESTABLISHING, Active Open [0 sess, 0 load]
00:07:31: Se0 LCP: O CONFREQ [Closed] id 4 len 26
00:07:31: Se0 LCP:   MagicNumber 0x6063D8DC (0x05066063D8DC)
00:07:31: Se0 LCP:   MRRU 1524 (0x110405F4)
00:07:31: Se0 LCP:   EndpointDisc 1 Montecito (0x130C014D6F6E74656369746F)
```



```
00:07:31: %LINK-3-UPDOWN: Interface Virtual-Access1, changed state to up
00:07:31: Vi1 PPP: Treating connection as a dedicated line
00:07:31: Vi1 LCP: O CONFREQ [Closed] id 1 len 26
00:07:31: Vi1 LCP: MagicNumber 0x6063D8F9 (0x05066063D8F9)
00:07:31: Vi1 LCP: MRRU 1524 (0x110405F4)
00:07:31: Vi1 LCP: EndpointDisc 1 Montecito (0x130C014D6F6E74656369746F)
00:07:31: Vi1 PPP: Phase is UP [0 sess, 0 load]
00:07:31: Vi1 BNCP: O CONFREQ [Closed] id 1 len 4
00:07:31: Vi1 IPCP: O CONFREQ [Closed] id 1 len 10
00:07:31: Vi1 IPCP: Address 10.1.1.1 (0x03060A010101)
00:07:31: Vi1 IPXCP: O CONFREQ [Closed] id 1 len 18
00:07:31: Vi1 IPXCP: Network 0x0000BEEF (0x01060000BEEF)
00:07:31: Vi1 IPXCP: Node 0000.0c31.aac2 (0x020800000C31AAC2)
00:07:31: Vi1 MLP: Added first link Se1 to bundle Goleta
00:07:31: Se0 LCP: I CONFREQ [REQsent] id 101 len 23
00:07:31: Se0 LCP: MagicNumber 0x60944EF7 (0x050660944EF7)
00:07:31: Se0 LCP: MRRU 1524 (0x110405F4)
00:07:31: Se0 LCP: EndpointDisc 1 Goleta (0x130901476F6C657461)
00:07:31: Se0 LCP: O CONFACK [REQsent] id 101 len 23
00:07:31: Se0 LCP: MagicNumber 0x60944EF7 (0x050660944EF7)
00:07:31: Se0 LCP: MRRU 1524 (0x110405F4)
00:07:31: Se0 LCP: EndpointDisc 1 Goleta (0x130901476F6C657461)
00:07:31: Se1 BNCP: MLP bundle interface is built, process packets now
00:07:31: Se1 BNCP: Redirect packet to Vi1
00:07:31: Vi1 BNCP: I CONFREQ [REQsent] id 1 len 4
00:07:31: Vi1 BNCP: O CONFACK [REQsent] id 1 len 4
00:07:31: Vi1 IPCP: I CONFREQ [REQsent] id 1 len 10
00:07:31: Vi1 IPCP: Address 192.168.10.2 (0x0306C0A80A02)
00:07:31: Vi1 IPCP: O CONFACK [REQsent] id 1 len 10
00:07:31: Vi1 IPCP: Address 192.168.10.2 (0x0306C0A80A02)
00:07:31: Vi1 IPXCP: I CONFREQ [REQsent] id 1 len 18
00:07:31: Vi1 IPXCP: Network 0x0000BEEF (0x01060000BEEF)
00:07:31: Vi1 IPXCP: Node 0000.0c47.4e9a (0x020800000C474E9A)
00:07:31: Vi1 IPXCP: O CONFACK [REQsent] id 1 len 18
00:07:31: Vi1 IPXCP: Network 0x0000BEEF (0x01060000BEEF)
00:07:31: Vi1 IPXCP: Node 0000.0c47.4e9a (0x020800000C474E9A)
00:07:31: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1,
changed state to up
00:07:31: Se0 LCP: I CONFACK [ACKsent] id 4 len 26
00:07:31: Se0 LCP: MagicNumber 0x6063D8DC (0x05066063D8DC)
00:07:31: Se0 LCP: MRRU 1524 (0x110405F4)
00:07:31: Se0 LCP: EndpointDisc 1 Montecito (0x130C014D6F6E74656369746F)
00:07:31: Se0 LCP: State is Open
00:07:31: Se0 PPP: Phase is VIRTUALIZED [0 sess, 2 load]
00:07:31: Vi1 MLP: Added link Se0 to bundle Goleta
00:07:31: Vi1 BNCP: I CONFACK [ACKsent] id 1 len 4
00:07:31: Vi1 BNCP: State is Open
00:07:31: Vi1 IPCP: I CONFACK [ACKsent] id 1 len 10
00:07:31: Vi1 IPCP: Address 10.1.1.1 (0x03060A010101)
00:07:31: Vi1 IPCP: State is Open
00:07:31: Vi1 IPXCP: I CONFACK [ACKsent] id 1 len 18
00:07:31: Vi1 IPXCP: Network 0x0000BEEF (0x01060000BEEF)
00:07:31: Vi1 IPXCP: Node 0000.0c31.aac2 (0x020800000C31AAC2)
00:07:31: Vi1 IPXCP: State is Open
00:07:31: Vi1 IPCP: Install route to 192.168.10.2
00:07:32: %LINEPROTO-5-UPDOWN: Line protocol on Interface Virtual-Access1,
changed state to up
00:07:32: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0,
changed state to up
Montecito#
```

```
Montecito#ping 192.168.10.2
```

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

```
Sending 5, 100-byte ICMP Echos to 192.168.10.2, timeout is 2 seconds:
```

!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 8/9/12 ms

Montecito#**ping ipx**

Target IPX address: BEEF.0000.0c47.4e9a

Repeat count [5]:

Datagram size [100]:

Timeout in seconds [2]:

Verbose [n]:

Type escape sequence to abort.

Sending 5, 100-byte IPX Novell Echoes to BEEF.0000.0c47.4e9a,

timeout is 2 seconds:

!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 8/10/12 ms

Montecito#

Depuraciones PPP en Goleta

Goleta#**debug ppp negotiation**

PPP protocol negotiation debugging is on

Goleta#

01:00:26: Se0 PPP: Treating connection as a dedicated line

01:00:26: Se0 PPP: Phase is ESTABLISHING, Active Open [0 sess, 0 load]

01:00:26: Se0 LCP: O CONFREQ [Closed] id 101 len 23

01:00:26: Se0 LCP: MagicNumber 0x60944B81 (0x050660944B81)

01:00:26: Se0 LCP: MRRU 1524 (0x110405F4)

01:00:26: Se0 LCP: EndpointDisc 1 Goleta (0x130901476F6C657461)

01:00:26: Se0 LCP: I CONFREQ [REQsent] id 4 len 26

01:00:26: Se0 LCP: MagicNumber 0x6063D57E (0x05066063D57E)

01:00:26: Se0 LCP: MRRU 1524 (0x110405F4)

01:00:26: Se0 LCP: EndpointDisc 1 Montecito (0x130C014D6F6E74656369746F)

01:00:26: Se0 LCP: O CONFACK [REQsent] id 4 len 26

01:00:26: Se0 LCP: MagicNumber 0x6063D57E (0x05066063D57E)

01:00:26: Se0 LCP: MRRU 1524 (0x110405F4)

01:00:26: Se0 LCP: EndpointDisc 1 Montecito (0x130C014D6F6E74656369746F)

01:00:26: Se0 LCP: I CONFACK [ACKsent] id 101 len 23

01:00:26: Se0 LCP: MagicNumber 0x60944B81 (0x050660944B81)

01:00:26: Se0 LCP: MRRU 1524 (0x110405F4)

01:00:26: Se0 LCP: EndpointDisc 1 Goleta (0x130901476F6C657461)

01:00:26: Se0 LCP: State is Open

01:00:26: Se0 PPP: Phase is VIRTUALIZED [0 sess, 0 load]

01:00:26: Vi1 PPP: Phase is DOWN, Setup [0 sess, 0 load]

01:00:26: Vi1 PPP: Phase is ESTABLISHING [0 sess, 0 load]

01:00:27: %LINK-3-UPDOWN: Interface Serial1, changed state to up

01:00:27: Se1 PPP: Treating connection as a dedicated line

01:00:27: Se1 PPP: Phase is ESTABLISHING, Active Open [0 sess, 0 load]

01:00:27: Se1 LCP: O CONFREQ [Closed] id 101 len 23

01:00:27: Se1 LCP: MagicNumber 0x60944EF7 (0x050660944EF7)

01:00:27: Se1 LCP: MRRU 1524 (0x110405F4)

01:00:27: Se1 LCP: EndpointDisc 1 Goleta (0x130901476F6C657461)

01:00:27: %LINK-3-UPDOWN: Interface Virtual-Access1, changed state to up

01:00:27: Vi1 PPP: Treating connection as a dedicated line

01:00:27: Vi1 LCP: O CONFREQ [Closed] id 1 len 23

01:00:27: Vi1 LCP: MagicNumber 0x60944F10 (0x050660944F10)

01:00:27: Vi1 LCP: MRRU 1524 (0x110405F4)

01:00:27: Vi1 LCP: EndpointDisc 1 Goleta (0x130901476F6C657461)

01:00:27: Vi1 PPP: Phase is UP [0 sess, 0 load]

01:00:27: Vi1 BNCP: O CONFREQ [Closed] id 1 len 4

01:00:27: Vi1 IPCP: O CONFREQ [Closed] id 1 len 10

01:00:27: Vi1 IPCP: Address 192.168.10.2 (0x0306C0A80A02)

01:00:27: Vi1 IPXCP: O CONFREQ [Closed] id 1 len 18

01:00:27: Vi1 IPXCP: Network 0x0000BEEF (0x01060000BEEF)

```
01:00:27: Vi1 IPXCP: Node 0000.0c47.4e9a (0x020800000C474E9A)
01:00:27: Vi1 MLP: Added first link Se0 to bundle Montecito
01:00:27: Se1 LCP: I CONFREQ [REQsent] id 4 len 26
01:00:27: Se1 LCP: MagicNumber 0x6063D8DC (0x05066063D8DC)
01:00:27: Se1 LCP: MRRU 1524 (0x110405F4)
01:00:27: Se1 LCP: EndpointDisc 1 Montecito (0x130C014D6F6E74656369746F)
01:00:27: Se1 LCP: O CONFACK [REQsent] id 4 len 26
01:00:27: Se1 LCP: MagicNumber 0x6063D8DC (0x05066063D8DC)
01:00:27: Se1 LCP: MRRU 1524 (0x110405F4)
01:00:27: Se1 LCP: EndpointDisc 1 Montecito (0x130C014D6F6E74656369746F)
01:00:27: Se0 BNCP: MLP bundle interface is built, process packets now
01:00:27: Se0 BNCP: Redirect packet to Vi1
01:00:27: Vi1 BNCP: I CONFREQ [REQsent] id 1 len 4
01:00:27: Vi1 BNCP: O CONFACK [REQsent] id 1 len 4
01:00:27: Se0 IPCP: MLP bundle interface is built, process packets now
01:00:27: Se0 IPCP: Redirect packet to Vi1
01:00:27: Vi1 IPCP: I CONFREQ [REQsent] id 1 len 10
01:00:27: Vi1 IPCP: Address 10.1.1.1 (0x03060A010101)
01:00:27: Vi1 IPCP: O CONFACK [REQsent] id 1 len 10
01:00:27: Vi1 IPCP: Address 10.1.1.1 (0x03060A010101)
01:00:27: Se0 IPXCP: MLP bundle interface is built, process packets now
01:00:27: Se0 IPXCP: Redirect packet to Vi1
01:00:27: Vi1 IPXCP: I CONFREQ [REQsent] id 1 len 18
01:00:27: Vi1 IPXCP: Network 0x0000BEEF (0x01060000BEEF)
01:00:27: Vi1 IPXCP: Node 0000.0c31.aac2 (0x020800000C31AAC2)
01:00:27: Vi1 IPXCP: O CONFACK [REQsent] id 1 len 18
01:00:27: Vi1 IPXCP: Network 0x0000BEEF (0x01060000BEEF)
01:00:27: Vi1 IPXCP: Node 0000.0c31.aac2 (0x020800000C31AAC2)
01:00:27: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0,
changed state to up
01:00:27: Se1 LCP: I CONFACK [ACKsent] id 101 len 23
01:00:27: Se1 LCP: MagicNumber 0x60944EF7 (0x050660944EF7)
01:00:27: Se1 LCP: MRRU 1524 (0x110405F4)
01:00:27: Se1 LCP: EndpointDisc 1 Goleta (0x130901476F6C657461)
01:00:27: Se1 LCP: State is Open
01:00:27: Se1 PPP: Phase is VIRTUALIZED [0 sess, 4 load]
01:00:27: Vi1 BNCP: I CONFACK [ACKsent] id 1 len 4
01:00:27: Vi1 BNCP: State is Open
01:00:27: Vi1 MLP: Added link Se1 to bundle Montecito
01:00:27: Vi1 IPCP: I CONFACK [ACKsent] id 1 len 10
01:00:27: Vi1 IPCP: Address 192.168.10.2 (0x0306C0A80A02)
01:00:27: Vi1 IPCP: State is Open
01:00:27: Vi1 IPXCP: I CONFACK [ACKsent] id 1 len 18
01:00:27: Vi1 IPXCP: Network 0x0000BEEF (0x01060000BEEF)
01:00:27: Vi1 IPXCP: Node 0000.0c47.4e9a (0x020800000C474E9A)
01:00:27: Vi1 IPXCP: State is Open
01:00:27: Vi1 IPCP: Install route to 10.1.1.1
01:00:28: %LINEPROTO-5-UPDOWN: Line protocol on Interface Virtual-Access1,
changed state to up
01:00:28: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1,
changed state to up
Goleta#
```

```
Goleta#ping 10.1.1.1
```

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

```
Sending 5, 100-byte ICMP Echos to 10.1.1.1, timeout is 2 seconds:
```

```
!!!!
```

```
Success rate is 100 percent (5/5), round-trip min/avg/max = 8/10/12 ms
```

```
Goleta#ping ipx
```

```
Target IPX address: BEEF.0000.0c31.aac2
```

```
Repeat count [5]:
```

```
Datagram size [100]:
```

```
Timeout in seconds [2]:
```

```
Verbose [n]:  
Type escape sequence to abort.  
Sending 5, 100-byte IPX Novell Echoes to BEEF.0000.0c31.aac2,  
timeout is 2 seconds:  
!!!!  
Success rate is 100 percent (5/5), round-trip min/avg/max = 8/10/12 ms
```

[Información Relacionada](#)

- [Página de soporte de la tecnología de acceso](#)
- [Soporte Técnico y Documentación - Cisco Systems](#)