Multilink tramite modello virtuale su due interfacce seriali

Sommario

Introduzione

MLP (Multilink PPP) bilancia il carico sulle interfacce dialer, ad esempio le interfacce ISDN, sincrone e asincrone. MLP divide i pacchetti e invia i frammenti sui circuiti paralleli. In questo modo, MLP migliora il throughput e riduce la latenza tra i sistemi. MLP fornisce un metodo per dividere, ricombinare e sequenziare datagrammi su più collegamenti dati logici. Il protocollo MLP permette di frammentare i pacchetti e di inviare contemporaneamente i frammenti su più collegamenti point-to-point allo stesso indirizzo remoto.

Questo documento illustra una connessione multipla tra interfacce seriali tramite la configurazione del modello virtuale.

Prerequisiti

Requisiti

Nessun requisito specifico previsto per questo documento.

Componenti usati

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

- Software Cisco IOS® versione 11.2 o successive.
- Due router Cisco 2503, ciascuno con due interfacce seriali WAN. Sui router è in esecuzione il software Cisco IOS versione 12.2(7b).

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.

Prodotti correlati

Questa configurazione può essere utilizzata anche con queste versioni hardware e software.

- Due router qualsiasi con due interfacce seriali WAN. È possibile utilizzare le interfacce seriali WIC-1T, WIC-2T e WAN fissa.

Convenzioni

Per ulteriori informazioni sulle convenzioni usate, consultare il documento Cisco sulle convenzioni nei suggerimenti tecnici.

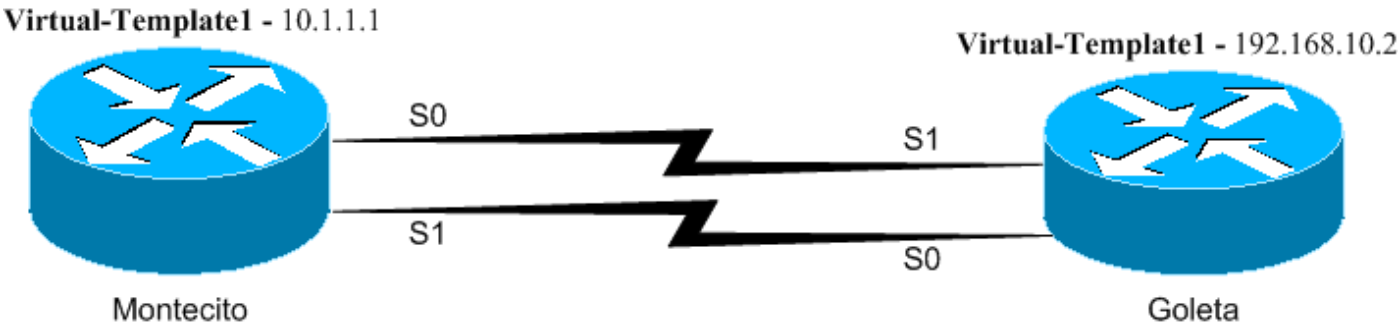
Configurazione

In questa sezione vengono presentate le informazioni necessarie per configurare le funzionalità descritte più avanti nel documento.

Nota: per ulteriori informazioni sui comandi menzionati in questo documento, usare lo strumento di ricerca dei comandi (solo utenti registrati).

Esempio di rete

Nel documento viene usata questa impostazione di rete:



I router Montecito e Goleta sono connessi back-to-back tramite le interfacce Serial0 e Serial1. Questa configurazione utilizza un modello virtuale su ciascun lato, il protocollo PPP (Multilink Point-to-Point Protocol) e i bridge e instrada l'IP e l'IPX tra i router.

Configurazioni

Nel documento vengono usate queste configurazioni:

- 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-l.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-Template1
!--- 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-Template1 !---
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 Serial1 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
```

Verifica

Per verificare che la configurazione funzioni correttamente, consultare questa sezione.

Lo strumento Output Interpreter (solo utenti registrati) (OIT) supporta alcuni comandi **show**. Usare l'OIT per visualizzare un'analisi dell'output del comando **show**.

- **show ppp multilink**: visualizza le informazioni sui fasci di connessione multipla attivi. Utilizzare questo comando per verificare la connessione multipla.
- **show interface virtual-access**: visualizza lo stato, i dati sul traffico e le informazioni di configurazione di un'interfaccia di accesso virtuale specifica.
- **show interface serial**: consente di risolvere qualsiasi problema relativo all'interfaccia seriale

Output di esempio

Mostra i comandi su Montecito dopo la connessione

```
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-Template1) of bridge group 1 is down
   Montecito#
```

[mostra comandi su Goleta dopo la connessione]

```
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-Template1) of bridge group 1 is down
```

Risoluzione dei problemi

Utilizzare questa sezione per risolvere i problemi relativi alla configurazione.

Risorse per la risoluzione dei problemi

Utilizzare le seguenti risorse per la risoluzione dei problemi come richiesto:

- Risoluzione dei problemi della linea seriale
- Connessioni back-to-back HDLC
- Risoluzione dei problemi relativi alle linee affittate

Comandi per la risoluzione dei problemi

Lo strumento Output Interpreter (solo utenti registrati) (OIT) supporta alcuni comandi **show**. Usare l'OIT per visualizzare un'analisi dell'output del comando **show**.

Nota: consultare le informazioni importanti sui comandi di debug prima di usare i comandi di

debug.

- **debug ppp negotiation**: indica se un client supera la negoziazione PPP. Controlla anche la negoziazione degli indirizzi.
- **debug ppp authentication**: indica se un client supera l'autenticazione. Utilizzare questo comando se si usa il software Cisco IOS versione 11.2 o successive.
- **debug ppp chap**: indica se un client supera l'autenticazione. Utilizzare questo comando se si utilizza un software Cisco IOS versione precedente alla 11.2.
- **debug ppp error**: visualizza gli errori di protocollo e le statistiche sugli errori associate alla negoziazione e al funzionamento della connessione PPP.
- **debug vtemplate**: consente di visualizzare le configurazioni dei modelli virtuali utilizzate.
- **debug vprofile**: consente di visualizzare le opzioni di configurazione applicate all'interfaccia di accesso virtuale.

Output di esempio del comando debug

Di seguito sono riportati alcuni output di debug per le chiamate riuscite. Prestare attenzione alle sezioni in **grassetto**. Confrontare l'output ottenuto con il risultato mostrato di seguito:

Debug PPP su 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#
```

Debug PPP su 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
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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.
```

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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
```

Informazioni correlate

- Pagina di supporto sulle tecnologie Access
- Documentazione e supporto tecnico – Cisco Systems