

Multilink via virtuele sjabloon op twee seriële interfaces

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Multilink PPP (MLP) balanst over dialerinterfaces, zoals ISDN, synchrone en asynchrone interfaces. MLP versplintert pakketten en stuurt de fragmenten via parallelle circuits. Op deze manier verbetert MLP de doorvoersnelheid en vermindert het de latentie tussen systemen. MLP biedt een methode om datagrammen te splitsen, te recombineren en te sequensen over meerdere logische gegevenslinks. MLP staat pakketten toe om te fragmenteren, en de fragmenten om tegelijkertijd over meerdere point-to-point links naar hetzelfde externe adres te worden verzonden.

Dit document illustreert een multilink-verbinding tussen seriële interfaces via de configuratie van de virtuele sjabloon.

[Voorwaarden](#)

[Vereisten](#)

Er zijn geen specifieke vereisten van toepassing op dit document.

[Gebruikte componenten](#)

De informatie in dit document is gebaseerd op de volgende software- en hardware-versies:

- Cisco IOS® softwarerelease 11.2 of hoger.
- Twee Cisco 2503 routers, die twee WAN-seriële interfaces elk hebben. Op deze routers wordt Cisco IOS-softwarerelease 12.2(7b) uitgevoerd.

De informatie in dit document is gebaseerd op de apparaten in een specifieke laboratoriumomgeving. Alle apparaten die in dit document worden beschreven, hadden een opgeschoonde (standaard)configuratie. Als uw netwerk live is, moet u de potentiële impact van elke opdracht begrijpen.

[Verwante producten](#)

Deze configuratie kan ook worden gebruikt met deze hardware- en softwareversies.

- Om het even welke twee routers die twee WAN seriële interfaces hebben. U kunt WIC-1T, WIC-2T en vaste WAN-seriële interfaces gebruiken.

[Conventies](#)

Raadpleeg [Cisco Technical Tips Conventions \(Conventies voor technische tips van Cisco\) voor meer informatie over documentconventies.](#)

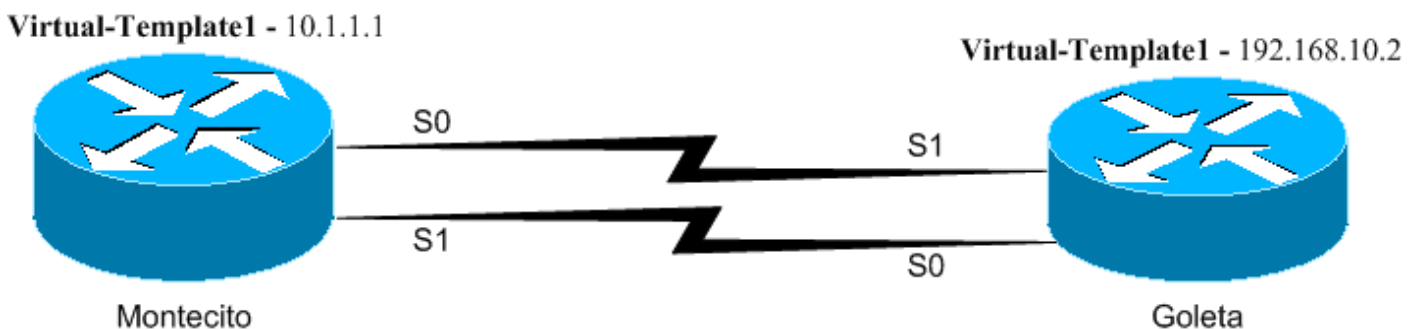
[Configureren](#)

Deze sectie bevat informatie over het configureren van de functies die in dit document worden beschreven.

N.B.: Gebruik het [Opdrachtupgereedschap \(alleen geregistreeerde klanten\)](#) om meer informatie te vinden over de opdrachten die in dit document worden gebruikt.

[Netwerkdigram](#)

Het netwerk in dit document is als volgt opgebouwd:



Routers Montecito en Goleta worden aangesloten terug-aan-terug door interfaces Seriële0 en Seriële1. Deze configuratie gebruikt een Virtual-sjabloon op elke kant, Multilink Point-to-Point Protocol (PPP), en bruggen en routes IP en IPX tussen de routers.

[Configuraties](#)

Dit document gebruikt deze configuraties:

- [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-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-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

```

Verifiëren

Gebruik dit gedeelte om te bevestigen dat de configuratie correct werkt.

Het [Uitvoer Tolk \(uitsluitend geregistreeerde klanten\)](#) (OIT) ondersteunt bepaalde **show** opdrachten. Gebruik de OIT om een analyse van **tonen** opdrachtoutput te bekijken.

- **toon PPP multilink**—geeft informatie weer over multilink bundels die actief zijn. Gebruik deze opdracht om de multilink-verbinding te controleren.
- **De status van de interface virtuele toegang** weergeven, verkeersgegevens en configuratieinformatie over een specifieke virtuele toegangsinterface.
- **serie van de tonen interface** - stelt u in staat om problemen met de seriële interface op te lossen

Uitvoer voorbeeld

Geef opdrachten op Montecito nadat de verbinding is gemaakt

```

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#
```

[Geef opdrachten op Goleta nadat de verbinding is gemaakt](#)

```
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
```

[Problemen oplossen](#)

Gebruik dit gedeelte om de configuratie van het probleem op te lossen.

[Bronnen voor probleemoplossing](#)

Gebruik deze bronnen voor probleemoplossing zoals vereist:

- [Probleemoplossing voor seriële lijnproblemen](#)
- [HDLC Terug-naar-Back verbindingen](#)
- Handelsposten voor probleemoplossing

[Opdrachten voor troubleshooting](#)

Het [Uitvoer Tolk](#) ([uitsluitend geregistreeerde](#) klanten) (OIT) ondersteunt bepaalde **show** opdrachten. Gebruik de OIT om een analyse van **tonen** opdrachtoutput te bekijken.

Opmerking: Raadpleeg [Belangrijke informatie over debug Commands](#) voordat u debug-opdrachten gebruikt.

- **debug PPP onderhandeling**-wijst erop of een client PPP onderhandeling passeert. Controleer ook op adresonderhandeling.
- **debug van PPP-authenticatie** geeft aan of een client authenticatie passeert. Gebruik deze opdracht als u Cisco IOS-software release 11.2 of hoger gebruikt.
- **debug pppketting**-wijst erop of een client authenticatie passeert. Gebruik deze opdracht als u een Cisco IOS-software release eerder dan release 11.2 gebruikt.
- **debug van PPP:** toont protocol fouten en foutstatistieken die bij de verbindingsonderhandeling en -handeling in PPP zijn gekoppeld.
- **debug Vsjabloon:** hiermee kunt u zien welke configuraties met virtuele sjablonen worden gebruikt.
- **debug vprofile**-stelt u in staat te zien welke configuratieopties zijn toegepast op de virtuele toegang interface.

Voorbeeld van output van foutopsporing

Hier zijn een paar debug uitgangen voor succesvolle oproepen. Let op de gedeelte in **vet** lettertype. Vergelijk de output die u hier behaalt met het resultaat dat hier wordt getoond:

PPP-debug op 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#

PPP-debugs op 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
```

Gerelateerde informatie

- [Ondersteuning voor toegangstechnologie](#)
- [Technische ondersteuning en documentatie – Cisco Systems](#)