Multilink über Virtual-Template auf zwei seriellen Schnittstellen

Inhalt

Einführung

Multilink PPP (MLP) gleicht die Last über Dialer-Schnittstellen wie ISDN, synchrone und asynchrone Schnittstellen aus. MLP teilt Pakete auf und sendet die Fragmente über parallele Schaltungen. Auf diese Weise verbessert MLP den Durchsatz und reduziert die Latenz zwischen den Systemen. MLP bietet eine Methode zum Aufteilen, erneuten Kombinieren und Sequenzieren von Datagrammen über mehrere logische Datenverbindungen. MLP ermöglicht die Fragmentierung von Paketen und das gleichzeitige Senden von Fragmenten über mehrere Point-to-Point-Verbindungen zur gleichen Remote-Adresse.

Dieses Dokument zeigt eine Multilink-Verbindung zwischen seriellen Schnittstellen über die Konfiguration der virtuellen Vorlage.

Voraussetzungen

Anforderungen

Für dieses Dokument bestehen keine speziellen Anforderungen.

Verwendete Komponenten

Die Informationen in diesem Dokument basieren auf den folgenden Software- und Hardwareversionen:

- Cisco IOS® Softwareversion 11.2 oder höher
- Zwei Cisco 2503-Router mit jeweils zwei seriellen WAN-Schnittstellen. Auf diesen Routern wird die Cisco IOS Software Version 12.2(7b) ausgeführt.

Die Informationen in diesem Dokument wurden von den Geräten in einer bestimmten Laborumgebung erstellt. Alle in diesem Dokument verwendeten Geräte haben mit einer leeren (Standard-)Konfiguration begonnen. Wenn Ihr Netzwerk in Betrieb ist, stellen Sie sicher, dass Sie die potenziellen Auswirkungen eines Befehls verstehen.

Zugehörige Produkte

Diese Konfiguration kann auch mit diesen Hardware- und Softwareversionen verwendet werden.

- Zwei beliebige Router mit zwei seriellen WAN-Schnittstellen. Sie können die seriellen Schnittstellen WIC-1T, WIC-2T und stationäres WAN verwenden.

Konventionen

Weitere Informationen zu Dokumentkonventionen finden Sie unter Cisco Technical Tips Conventions (Technische Tipps zu Konventionen von Cisco).

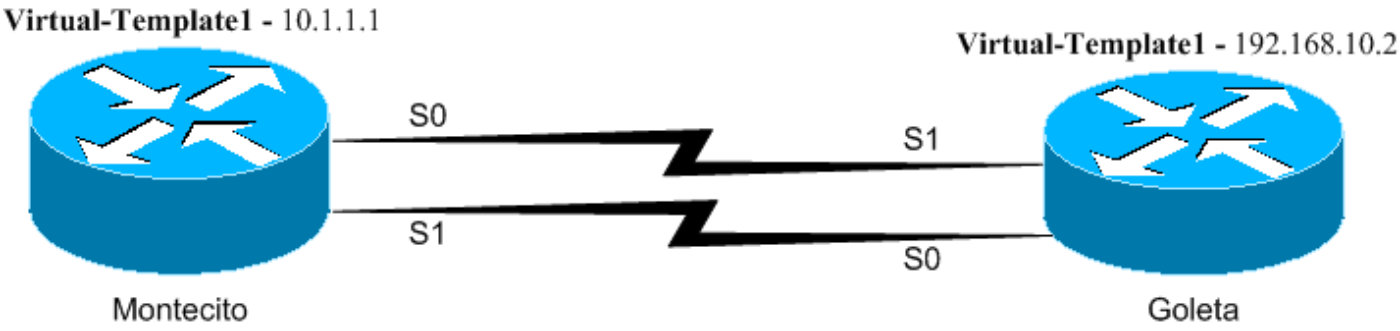
Konfigurieren

In diesem Abschnitt erhalten Sie Informationen zum Konfigurieren der in diesem Dokument beschriebenen Funktionen.

Hinweis: Verwenden Sie das Command Lookup Tool (nur registrierte Kunden), um weitere Informationen zu den in diesem Dokument verwendeten Befehlen zu erhalten.

Netzwerkdiagramm

In diesem Dokument wird die folgende Netzwerkeinrichtung verwendet:



Die Router Montecito und Goleta werden über die Schnittstellen Serial0 und Serial1 rückseitig verbunden. Bei dieser Konfiguration wird auf jeder Seite eine Virtual Template (Virtuelle Vorlage), Multilink Point-to-Point Protocol (PPP), verwendet. Außerdem werden IP- und IPX-Verbindungen zwischen den Routern überbrückt und weitergeleitet.

Konfigurationen

In diesem Dokument werden folgende Konfigurationen verwendet:

- 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
```

Überprüfen

In diesem Abschnitt überprüfen Sie, ob Ihre Konfiguration ordnungsgemäß funktioniert.

Das Output Interpreter Tool (nur registrierte Kunden) (OIT) unterstützt bestimmte **show**-Befehle. Verwenden Sie das OIT, um eine Analyse der **Ausgabe des** Befehls **show anzuzeigen**.

- **show ppp multilink** - Zeigt Informationen zu aktiven Multilink-Paketen an. Verwenden Sie diesen Befehl, um die Multilink-Verbindung zu überprüfen.
- **show interface virtual-access**: Zeigt Status, Datenverkehrsdaten und Konfigurationsinformationen zu einer bestimmten virtuellen Zugriffsschnittstelle an.
- **show interface serial** - ermöglicht Ihnen, alle Probleme mit der seriellen Schnittstelle zu beheben.

Beispielausgabe

Befehle auf dem Montecito nach Herstellen der Verbindung anzeigen

```
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#
```

Befehle auf Goleta anzeigen, nachdem die Verbindung hergestellt wurde

```
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
```

Fehlerbehebung

In diesem Abschnitt finden Sie eine Fehlerbehebung für Ihre Konfiguration.

Ressourcen zur Fehlerbehebung

Verwenden Sie die folgenden Ressourcen zur Fehlerbehebung nach Bedarf:

- Fehlerbehebung bei Problemen mit seriellen Leitungen
- HDLC Back-to-Back-Verbindungen
- Fehlerbehebung bei Mietleitungen

Befehle zur Fehlerbehebung

Das Output Interpreter Tool (nur registrierte Kunden) (OIT) unterstützt bestimmte **show**-Befehle. Verwenden Sie das OIT, um eine Analyse der **Ausgabe des** Befehls **show anzuzeigen**.

Hinweis: Beachten Sie vor der Verwendung von **Debug-**Befehlen die Informationen zu Debug-Befehlen.

- **debug ppp negotiation**: Gibt an, ob ein Client PPP-Aushandlung erfolgreich besteht. Prüft auch auf Adressverhandlung.
- **debug ppp authentication**: Gibt an, ob ein Client die Authentifizierung besteht. Verwenden Sie diesen Befehl, wenn Sie Cisco IOS Software Release 11.2 oder höher verwenden.
- **debug ppp chap**: Gibt an, ob ein Client die Authentifizierung besteht. Verwenden Sie diesen Befehl, wenn Sie eine Cisco IOS Software-Version vor Version 11.2 verwenden.
- **debug ppp error** (**ppp-Fehler debuggen**): Zeigt Protokollfehler und Fehlerstatistiken an, die mit der Aushandlung und Ausführung von PPP-Verbindungen verknüpft sind.
- **debug template**: Hier können Sie sehen, welche virtuellen Vorlagenkonfigurationen verwendet werden.
- **debug profile**: Hier können Sie sehen, welche Konfigurationsoptionen auf die Virtual-Access-Schnittstelle angewendet werden.

Beispielausgabe für Debugging

Hier sind einige Debug-Ausgaben für erfolgreiche Aufrufe. Achten Sie auf die Bereiche in **Fettschrift**. Vergleichen Sie die Ausgabe, die Sie erhalten, mit dem hier gezeigten Ergebnis:

PPP-Debugging auf 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-Debugging auf 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]
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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
```

Zugehörige Informationen

- Seite "Technischer Support" aufrufen
- Technischer Support und Dokumentation - Cisco Systems