Multilink PPP sur deux interfaces asynchrones de la couche physique

Contenu

Introduction

Dans quelques environnements, il peut être nécessaire d'empaqueter de plusieurs liens asynchrones pour agir en tant que lien simple avec la bande passante agrégée. Ce document décrit comment configurer un serveur d'accès de Cisco 2500 pour empaqueter deux interfaces asychronous utilisant un modèle virtuel.

Cette configuration peut être utilisée pour des Routeurs reliés par les lignes asynchrones aux Modems externes ou des modules réseau d'utilisation (modems internes). Vous pouvez ajouter des fonctionnalités supplémentaires à cette configuration selon vos besoins.

Conditions préalables

Conditions requises

Aucune condition préalable spécifique n'est requise pour ce document.

Composants utilisés

Les informations dans ce document sont basées sur les versions de logiciel et de matériel ci-dessous.

- Cisco 2511 et Routeur Cisco 2503 dans un environnement de travaux pratiques avec des

configurations effacées.
- Le logiciel de Cisco IOS® Realease 12.2(10b) s'exécute sur les deux Routeurs.
- Quatre Modems externes.

Les informations présentées dans ce document ont été créées à partir de périphériques dans un environnement de laboratoire spécifique. Tous les périphériques utilisés dans ce document ont démarré avec une configuration effacée (par défaut). Si vous travaillez dans un réseau opérationnel, assurez-vous de bien comprendre l'impact potentiel de toute commande avant de l'utiliser.

Produits connexes

Cette configuration peut être utilisée avec deux Routeurs quelconques que chacune a deux interfaces série WAN et est capable de configurer l'interface asynchrone. Des interfaces série asynchrones WIC-1T, WIC-2A/S, 8 ou 16 de port peuvent être utilisées.

Conventions

Pour plus d'informations sur les conventions des documents, référez-vous aux Conventions utilisées pour les conseils techniques de Cisco.

Configurez

Cette section vous fournit des informations pour configurer les fonctionnalités décrites dans ce document.

Note: Pour obtenir des informations supplémentaires sur les commandes utilisées dans ce document, utilisez l'Outil de recherche de commande (clients enregistrés seulement).

Diagramme du réseau

Ce document utilise la configuration réseau indiquée dans le diagramme suivant :

Configurations

Ce document utilise les configurations présentées ci-dessous.

Note: Cette configuration a été testée utilisant la version du logiciel Cisco IOS 12.2(10b) sur le Routeurs de la gamme Cisco 2500. La même configuration applique au Cisco IOS courant d'une topologie semblable de routeur des versions logicielles à partir de la version 11.0(3).

Routeur 1 (Cisco 2511)

```
Current configuration : 1185 bytes
!
version 12.2
service timestamps debug datetime msec
service timestamps log datetime msec
!
hostname Router1
!
```

```
username Router2 password 0 xxxxx
ip subnet-zero
!
multilink virtual-template 1
!--- Applies the virtual interface template to the
multilink bundle. ! interface Loopback0 ip address
192.168.0.2 255.255.255.0 ! interface Ethernet0 ip
address 10.0.0.1 255.255.255.0 ! !--- Interface virtual-
template is a logical interface which creates !---
virtual access interfaces dynamically and applies them
to physical !--- asynchronous interfaces. interface
Virtual-Template1 ip unnumbered Loopback0 ppp
authentication chap !--- Enables multilink PPP on the
virtual template interface. ppp multilink ! !--- The
parameters configured in interface group-async are !---
applied to the group and range reduces the repeated
configuration !--- in asynchrornous interfaces.
interface Group-Async0 ip unnumbered Loopback0
encapsulation ppp async default routing !--- Permits
routing over the async interface. !--- This is required
for a routing protocol to run across the async link.
async mode dedicated !--- Places the line into dedicated
asynchronous network mode. !--- This interface is now
automatically configured for PPP connections. ppp
authentication chap ppp multilink group-range 9 10 !---
Group-range indicates the asynchronous interfaces which
comes under !--- the Group-Async interface. ! router
ospf 1 redistribute connected subnets network
192.168.0.0 0.0.0.255 area 0 ! ip classless ! dialer-
list 1 protocol ip permit ! ! line con 0 line 1 8 flush-
at-activation line 9 10 modem InOut modem autoconfigure
type default transport input all autohangup speed 115200
line 11 16 flush-at-activation line aux 0 line vty 0 4
login ! end
```

Routeur 2 (Cisco 2503)

```
Current configuration : 1645 bytes
!
version 12.2
service timestamps debug datetime msec
service timestamps log datetime msec
!
hostname Router2
!
username Router1 password 0 xxxxx
!--- Username for remote router (Router1) and shared
secret. !--- Shared secret(used for CHAP authentication)
must be the same on both sides. ip subnet-zero ! chat-
script test "" "ATDT\T" TIMEOUT 120 CONNECT \C !--- A
chat script is a string of text that defines the
handshaking that occurs !--- between the router and the
modem to sucessfully handshake with the destination. !--
- In this chat-script called "test" the expected string
"" is !--- the null from the destination. The send
string "ATDT\T" instructs the !--- modem to dial the
telephone number in the dialer string !--- command. This
is 30116 and 30114 in the Interface dialer 3 TIMEOUT 120
CONNECT \C. !--- It waits up to 120 seconds for the
input string "CONNECT". \C is an escape !--- sequence to
end the chat-script. !--- Refer to the Modem-Router
Connection Guide and Chat-script !--- for more
information ! modemcap entry default !--- Modemcap named
```

```
"default" will be applied to the line 2 and line 3 of !-
-- Serial interfaces. Refer to the Modem-Router
Connection Guide and !--- modemcap entry for more
information. ! interface Loopback0 ip address
192.168.0.1 255.255.255.0 ! interface Ethernet0 ip
address 172.16.1.1 255.255.255.0 ! ! interface Serial2
physical-layer async no ip address encapsulation ppp
dialer in-band dialer rotary-group 3 !--- Dialer rotary-
group applies the the logical interface dialer 3 !---
configuration to physical serial Interfaces 2 and 3.
This simplifies the !--- configuration, else the
commands in interface dialer has to be repeatedly !---
configured in physical interfaces. async mode dedicated
! interface Serial3 physical-layer async no ip address
encapsulation ppp dialer in-band dialer rotary-group 3
dialer-group 1 async default routing async mode
dedicated ! interface Dialer3 ! -- This is a logical
interface applied to dialer rotary-group. ip unnumbered
Loopback0 encapsulation ppp dialer in-band dialer idle-
timeout 60 dialer map ip 192.168.0.2 name Router1 modem-
script test broadcast 30116 dialer map ip 192.168.0.2
name Router1 modem-script test broadcast 30114 !---
dialer map statements for the remote router Router1 !---
The name must match the one used by the remote router to
identify itself. !--- use modem chat script "test" for
this connection dialer hold-queue 15 dialer load-
threshold 1 either dialer-group 1 no cdp enable ppp
authentication chap ppp multilink ! router ospf 1
redistribute connected subnets network 192.168.0.0
0.0.0.255 area 0 ! ip classless ! dialer-list 1 protocol
ip permit !--- All IP traffic is defined interesting. !-
-- This is applied to Async interface 2 and 3 using
dialer-group 1. ! ! line con 0 line 2 3 modem InOut
modem autoconfigure type default !--- Apply the modemcap
"default" (configured previously) to !--- initalize the
modem. Refer to the link Modem-Router Connection Guide
!--- for more information. transport input all !---
Allows all protocols to be passed to the access server
!--- through the line. autohangup !--- Disconnects the
line automatically after the connection closes. speed
115200 line aux 0 line vty 0 4 login ! end
```

Pour implémenter cette configuration, vous devez configurer ce qui suit :

- Créez un nombre de multilink virtual-template sur le routeur 1.
- Configurez le **ppp multilink** sous les interfaces sur les deux Routeurs.
- Configurez l'authentification sous les interfaces sur les deux Routeurs.

Dans la configuration utilisée dans ce document, le routeur 1 a été configuré pour recevoir seulement des appels, alors que le Router2 initie l'appel et se connecte au routeur 1. Les deux Routeurs sont configurés pour le PPP à liaisons multiples. Quand la connexion est soulevée, un lot principal est créé et les deux liaisons asynchrones sont empaquetées ensemble sous une interface d'accès virtuel.

Les interfaces 9 et 10 sur le routeur 1 reçoivent seulement des appels asynchrones. Il est normal de ne pas voir qu'interface 9 et 10 quand ils font partie de group-async 1. soit sûre de créer un modèle virtuel de multilink ; autrement, il est possible de se connecter sur le premier canal, mais de ne pas passer le trafic (protocole de contrôle IP [IPCP] fermé). Sans virtual-template et PPP à liaisons multiples, cette configuration fonctionnerait pour une connexion async, mais pas pour chacun des deux.

Les interfaces 2 et 3 sur le Router2 sont configurées avec la commande **async de couche physique** et recevront des commandes de PPP à liaisons multiples. Ces interfaces seront automatiquement retirées quand elles vont bien à une partie de groupe rotatif de routeurs d'appels. Dès que vous sélectionnerez la commande du **groupe rotatif de routeurs d'appels 3**, la commande **séquentielle de ppp multilink** est supprimée de la configuration. Utilisez la commande de **ppp multilink** sous l'interface dialer 3 à la place.

Vérifiez

Cette section présente des informations que vous pouvez utiliser pour vous assurer que votre configuration fonctionne correctement.

Certaines commandes **show** sont prises en charge par l'Output Interpreter Tool (clients enregistrés uniquement), qui vous permet de voir une analyse de la sortie de la commande show.

```
Router1#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

     172.16.0.0/24 is subnetted, 1 subnets
O E2    172.16.1.0 [110/20] via 192.168.0.1, 00:32:54, Virtual-Access1
     10.0.0.0/24 is subnetted, 1 subnets
C       10.0.0.0 is directly connected, Ethernet0
     192.168.0.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.0.0/24 is directly connected, Loopback0
C       192.168.0.1/32 is directly connected, Virtual-Access1

Router1#show ppp multilink

Virtual-Access1, bundle name is Router2
! --- Virtualized MP bundle. Bundle name is derived from the username used !--- during
authentication Bundle up for 00:34:48 0 lost fragments, 0 reordered, 0 unassigned 0 discarded, 0
lost received, 1/255 load 0xC8 received sequence, 0xC8 sent sequence Member links: 2 (max not
set, min not set)
    Async9, since 00:34:52, last rcvd seq 0000C6
    Async10, since 00:32:11, last rcvd seq 0000C7


Router2#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

     172.16.0.0/24 is subnetted, 1 subnets
C       172.16.1.0 is directly connected, Ethernet0
```

```
     10.0.0.0/24 is subnetted, 1 subnets
O E2    10.0.0.0 [110/20] via 192.168.0.2, 00:45:10, Dialer3
     192.168.0.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.0.0/24 is directly connected, Loopback0
C       192.168.0.2/32 is directly connected, Dialer3

Router2#show ppp multilink

Virtual-Access1, bundle name is Router1
!--- Virtualized MP bundle. Bundle name is derived from the username used !--- during
authentication. Bundle up for 00:35:10 Dialer interface is Dialer3 !--- This Virtual Access
Interface used Interface Dialer3. 0 lost fragments, 0 reordered, 0 unassigned 0 discarded, 0
lost received, 1/255 load 0xC9 received sequence, 0xCA sent sequence  Member links: 2 (max not
set, min not set)
    Serial3, since 00:35:10, last rcvd seq 0000C8
    Serial2, since 00:32:29, last rcvd seq 0000C7

Router1#show caller
                                              Active    Idle
  Line           User              Service       Time      Time
  con 0          -                 TTY           00:12:03  00:00:00
  tty 2          -                 TTY           1d08h     00:00:00
  tty 4          -                 TTY           1d08h     00:00:00
  tty 9          Router2           Async         00:43:17  00:00:05
  tty 10         Router2           Async         00:40:36  00:00:15
!--- First connection As9 Router2 PPP 00:43:13 - !--- Second connection As10 Router2 PPP
00:40:32 - !--- MP bundle !--- Router2 has two async lines, two TTY, and one virtual interface
bundle. Vi1 Router2 PPP Bundle 00:43:10 00:00:05 Router2#show caller
                                              Active    Idle
  Line           User              Service       Time      Time
  con 0          -                 TTY           00:11:36  00:00:00
  tty 2          Router1           Async         -         00:00:07
  tty 3          Router1           Async         -         00:00:18
  ! --- Second connection Se2 Router1 PPP 00:39:58 - ! --- First connection Se3 Router1 PPP
00:42:39 - ! --- MP bundle ! --- Router1 has two async lines, two TTY, and one virtual interface
bundle. Vi1 Router1 PPP Bundle 00:42:39 00:00:01 Router2#show caller user Router1

  User: Router1, line tty 2, service Async
 Idle time 00:00:16
  Timeouts:            Absolute  Idle      Idle
                                 Session   Exec
      Limits:          -         -         00:10:00
      Disconnect in:   -         -         -
  TTY: Line 2, running PPP on Se2
  Line: Baud rate (TX/RX) is 115200/115200, no parity, 2 stopbits, 8 databits
  Status: Ready, Active, Async Interface Active, Modem Detected
  Capabilities: Modem Callout, Modem RI is CD,
                Line is permanent async interface, Hangup on Last Close
                Modem Autoconfigure
  Modem State: Ready, Modem Configured

  User: Router1, line tty 3, service Async
      Idle time 00:00:08
Timeouts:            Absolute  Idle      Idle
                               Session   Exec
    Limits:          -         -         00:10:00
    Disconnect in:   -         -         -
TTY: Line 3, running PPP on Se3
Line: Baud rate (TX/RX) is 115200/115200, no parity, 2 stopbits, 8 databits
Status: Ready, Active, Async Interface Active, Modem Detected
Capabilities: Modem Callout, Modem RI is CD,
              Line is permanent async interface, Hangup on Last Close
              Modem Autoconfigure
Modem State: Ready, Modem Configured
```

User: Router1, line Se2, service PPP
      Active time 23:14:47, Idle time 00:00:00
Timeouts: Absolute Idle
    Limits: -   -
    Disconnect in: -   -
PPP: LCP Open, **multilink Open**, CHAP (local <--> local)
Dialer: Connected to 30116, outbound
        Type is IN-BAND ASYNC, group Di3
        Cause: Multilink bundle overloaded
IP: Local 192.168.0.1
Bundle: Member of Router1, last input 00:00:01
Counts: 10194 packets input, 769456 bytes, 0 no buffer
        0 input errors, 0 CRC, 0 frame, 0 overrun
        10247 packets output, 773761 bytes, 0 underruns
        0 output errors, 0 collisions, 31 interface resets

User: Router1, line Se3, service PPP
      Active time 23:17:30, Idle time 00:00:01
Timeouts: Absolute Idle
    Limits: -   -
    Disconnect in: -   -
PPP: LCP Open, **multilink Open**, CHAP (local <--> local)
Dialer: Connected to 30116, outbound
        Type is IN-BAND ASYNC, group Di3
        Cause: ip (s=192.168.0.1, d=224.0.0.5)
IP: Local 192.168.0.1
Bundle: Member of Router1, last input 00:00:00
Counts: 10432 packets input, 783562 bytes, 0 no buffer
        0 input errors, 0 CRC, 0 frame, 0 overrun
        10718 packets output, 799155 bytes, 0 underruns
        0 output errors, 0 collisions, 41 interface resets

User: Router1, line Vi1, service PPP Bundle
      Active time 23:17:30, Idle time 00:00:05
Timeouts: Absolute Idle
    Limits: -   00:01:00
    Disconnect in: -   00:00:54
!--- Idle-timeout is 60 seconds(1 Minute). PPP: LCP Open, **multilink Open**, IPCP
Dialer: Connected to 30116, outbound
        Idle timer 60 secs, idle 6 secs
        Type is IN-BAND SYNC, group Di3
IP: Local 192.168.0.1, remote 192.168.0.2
!--- IP address assigned to the bundle !--- and loopback address of the remote router. Bundle: First link of Router1, 2 links, last input 00:00:07 Counts: 8622 packets input, 623202 bytes, 0 no buffer 0 input errors, 0 CRC, 0 frame, 0 overrun 8776 packets output, 618523 bytes, 0 underruns 0 output errors, 0 collisions, 0 interface resets Router2#**show dialer**

Di3 - dialer type = IN-BAND SYNC NO-PARITY
Load threshold for dialing additional calls is 1
!--- Load threshold Idle timer (60 secs), Fast idle timer (20 secs) Wait for carrier (30 secs), Re-enable (15 secs) Number of active calls = 2 Dial String Successes Failures Last DNIS Last status 30114 3 69 00:41:45 successful 30116 4294967293 75 00:44:00 failed Se2 - dialer type = IN-BAND ASYNC NO-PARITY Rotary group 3, priority 0 *!--- Member of interface dialer 3* Idle timer (60 secs), Fast idle timer (20 secs) Wait for carrier (30 secs), Re-enable (15 secs) Dialer state is multilink member **Dial reason: Multilink bundle overloaded**
!--- Interface was not the first link in the MP bundle Connected to 30116 (Router1) *!--- Phone number that was dialed* Se3 - dialer type = IN-BAND ASYNC NO-PARITY Rotary group 3, priority 0 *!--- Member of interface dialer 3* Idle timer (60 secs), Fast idle timer (20 secs) Wait for carrier (30 secs), Re-enable (15 secs) Dialer state is multilink member Dial reason: ip (s=192.168.0.1, d=224.0.0.5) *!--- Interface was the first link in the bundle, triggered by OSPF ALL !--- Routers advt packet.* Connected to 30116 (Router1) *! --- Phone number that was dialed*

Dépannez

Cette section fournit des informations que vous pouvez utiliser pour dépanner votre configuration.

Les sorties suivantes ont été obtenues de Cisco 2511 et des Routeur Cisco 2503. Ils affichent Cisco 2503 composant aux liens PSTN du routeur Cisco 2511 et établissant une connexion de député britannique.

```
Router1#debug ppp negotiation
PPP protocol negotiation debugging is on

Router1#debug vtemplate
Virtual Template debugging is on

Router1#show debug
PPP:
  PPP protocol negotiation debugging is on
VTEMPLATE:
  Virtual Template debugging is on

Oct  1 20:15:20.463: As9 LCP: I CONFREQ [Closed] id 81 len 39
Oct  1 20:15:20.463: As9 LCP:    ACCM 0x000A0000 (0x0206000A0000)
Oct  1 20:15:20.467: As9 LCP:    AuthProto CHAP (0x0305C22305)
Oct  1 20:15:20.471: As9 LCP:    MagicNumber 0x57D7985D (0x050657D7985D)
Oct  1 20:15:20.471: As9 LCP:    PFC (0x0702)
Oct  1 20:15:20.475: As9 LCP:    ACFC (0x0802)
Oct  1 20:15:20.479: As9 LCP:    MRRU 1524 (0x110405F4)
Oct  1 20:15:20.479: As9 LCP:    EndpointDisc 1 Router2 (0x130A01526F7574657232)
Oct  1 20:15:20.483: As9 LCP: Lower layer not up, Fast Starting
Oct  1 20:15:20.487: As9 PPP: Treating connection as a dedicated line
Oct  1 20:15:20.487: As9 PPP: Phase is ESTABLISHING, Active Open [0 sess, 0 load]
Oct  1 20:15:20.495: As9 LCP: O CONFREQ [Closed] id 52 len 39
Oct  1 20:15:20.499: As9 LCP:    ACCM 0x000A0000 (0x0206000A0000)
Oct  1 20:15:20.499: As9 LCP:    AuthProto CHAP (0x0305C22305)
Oct  1 20:15:20.503: As9 LCP:    MagicNumber 0x078F2456 (0x0506078F2456)
Oct  1 20:15:20.507: As9 LCP:    PFC (0x0702)
Oct  1 20:15:20.507: As9 LCP:    ACFC (0x0802)
Oct  1 20:15:20.511: As9 LCP:    MRRU 1524 (0x110405F4)
Oct  1 20:15:20.515: As9 LCP:    EndpointDisc 1 Router1 (0x130A01526F7574657231)
Oct  1 20:15:20.519: As9 LCP: O CONFACK [REQsent] id 81 len 39
Oct  1 20:15:20.523: As9 LCP:    ACCM 0x000A0000 (0x0206000A0000)
Oct  1 20:15:20.527: As9 LCP:    AuthProto CHAP (0x0305C22305)
Oct  1 20:15:20.527: As9 LCP:    MagicNumber 0x57D7985D (0x050657D7985D)
Oct  1 20:15:20.531: As9 LCP:    PFC (0x0702)
Oct  1 20:15:20.531: As9 LCP:    ACFC (0x0802)
Oct  1 20:15:20.535: As9 LCP:    MRRU 1524 (0x110405F4)
Oct  1 20:15:20.539: As9 LCP:    EndpointDisc 1 Router2 (0x130A01526F7574657232)
Oct  1 20:15:20.547: %LINK-3-UPDOWN: Interface Async9, changed state to up
Oct  1 20:15:20.695: As9 LCP: I CONFACK [ACKsent] id 52 len 39
Oct  1 20:15:20.699: As9 LCP:    ACCM 0x000A0000 (0x0206000A0000)
Oct  1 20:15:20.703: As9 LCP:    AuthProto CHAP (0x0305C22305)
Oct  1 20:15:20.707: As9 LCP:    MagicNumber 0x078F2456 (0x0506078F2456)
Oct  1 20:15:20.707: As9 LCP:    PFC (0x0702)
Oct  1 20:15:20.711: As9 LCP:    ACFC (0x0802)
Oct  1 20:15:20.711: As9 LCP:    MRRU 1524 (0x110405F4)
Oct  1 20:15:20.715: As9 LCP:    EndpointDisc 1 Router1 (0x130A01526F7574657231)
Oct  1 20:15:20.719: As9 LCP: State is Open
Oct  1 20:15:20.723: As9 PPP: Phase is AUTHENTICATING, by both [0 sess, 0 load]
Oct  1 20:15:20.727: As9 CHAP: O CHALLENGE id 45 len 28 from "Router1"
Oct  1 20:15:20.739: As9 CHAP: I CHALLENGE id 40 len 28 from "Router2"
Oct  1 20:15:20.743: As9 CHAP: O RESPONSE id 40 len 28 from "Router1"
Oct  1 20:15:20.899: As9 CHAP: I RESPONSE id 45 len 28 from "Router2"
Oct  1 20:15:20.903: As9 CHAP: I SUCCESS id 40 len 4
```

Oct 1 20:15:20.919: **As9 CHAP: O SUCCESS id 45 len 4**
!--- Call is virtualized after authentication Oct 1 20:15:20.923: **As9 PPP: Phase is VIRTUALIZED** [0 sess, 1 load]
!--- creation of Virtual access interface 1 Oct 1 20:15:20.935: Vi1 VTEMPLATE: Reuse Vi1, recycle queue size 0 Oct 1 20:15:20.939: Vi1 VTEMPLATE: Set default settings with ip unnumbered Oct 1 20:15:21.335: Vi1 VTEMPLATE: Hardware address 0000.0c47.7c6c Oct 1 20:15:21.335: Vi1 PPP: Phase is DOWN, Setup [0 sess, 1 load] Oct 1 20:15:21.339: Vi1 VTEMPLATE: Has a new cloneblk vtemplate, now it has vtemplate *!--- Banner: Cloning is in progress on virtual access interface 1* Oct 1 20:15:21.347: Vi1 VTEMPLATE: ******** CLONE VACCESS1 ************ Oct 1 20:15:21.351: **Vi1 VTEMPLATE: Clone from Virtual-Template1**
!--- The following configuration of Virtual-template is cloned to the !--- Virtual-access interface. interface Virtual-Access1 default ip address no ip address encap ppp ip unnumbered Loopback0 no ip unnumbered Loopback0 ip addr 192.168.0.2 255.255.255.0 no ip add ip unnumbered lo 0 ip add 192.168.0.2 255.255.255.0 ip add 192.168.1.2 255.255.255.0 no ip add ip unnumbered lo 0 end Oct 1 20:15:21.367: As9 IPCP: Packet buffered while building MLP bundle interface Oct 1 20:15:22.319: %LINEPROTO-5-UPDOWN: Line protocol on Interface Async9, changed state to up Oct 1 20:15:23.267: As9 IPCP: Packet buffered while building MLP bundle interface Oct 1 20:15:24.447: Vi1 VTEMPLATE: Messages from (un)cloning ... 192.168.0.0 overlaps with Loopback0 Oct 1 20:15:24.823: Vi1 VTEMPLATE: Messages from (un)cloning ... 192.168.0.0 overlaps with Loopback0
Oct 1 20:15:24.835: **%LINK-3-UPDOWN: Interface Virtual-Access1, changed state to up**
Oct 1 20:15:24.843: Vi1 PPP: Treating connection as a dedicated line
Oct 1 20:15:24.847: **Vi1 PPP: Phase is ESTABLISHING, Active Open [0 sess, 1 load]**
Oct 1 20:15:24.851: Vi1 LCP: O CONFREQ [Closed] id 1 len 29
Oct 1 20:15:24.855: Vi1 LCP: AuthProto CHAP (0x0305C22305)
Oct 1 20:15:24.859: Vi1 LCP: MagicNumber 0x078F3560 (0x0506078F3560)
Oct 1 20:15:24.859: Vi1 LCP: MRRU 1524 (0x110405F4)
Oct 1 20:15:24.863: Vi1 LCP: EndpointDisc 1 Router1 (0x130A01526F7574657231)

Oct 1 20:15:24.879: Vi1 PPP: Phase is UP [0 sess, 1 load]
Oct 1 20:15:24.883: Vi1 IPCP: O CONFREQ [Closed] id 1 len 10
Oct 1 20:15:24.883: Vi1 IPCP: Address 192.168.0.2 (0x0306C0A80002)
! -- Asynchrornous interface 9 is added to the Virtual access interface 1 !--- and the name of the bundle is Router2. Oct 1 20:15:24.891: **Vi1 MLP: Added first link As9 to bundle Router2**
Oct 1 20:15:24.891: Vi1 PPP: Pending ncpQ size is 2
Oct 1 20:15:24.895: As9 IPCP: Redirect packet to Vi1
Oct 1 20:15:24.895: Vi1 IPCP: I CONFREQ [REQsent] id 1 len 10
Oct 1 20:15:24.899: Vi1 IPCP: Address 192.168.0.1 (0x0306C0A80001)
Oct 1 20:15:24.903: Vi1 IPCP: O CONFACK [REQsent] id 1 len 10
Oct 1 20:15:24.907: Vi1 IPCP: Address 192.168.0.1 (0x0306C0A80001)
Oct 1 20:15:24.911: As9 IPCP: Redirect packet to Vi1
Oct 1 20:15:24.915: Vi1 IPCP: I CONFREQ [ACKsent] id 2 len 10
Oct 1 20:15:24.919: Vi1 IPCP: Address 192.168.0.1 (0x0306C0A80001)
Oct 1 20:15:24.919: Vi1 IPCP: O CONFACK [ACKsent] id 2 len 10
Oct 1 20:15:24.923: Vi1 IPCP: Address 192.168.0.1 (0x0306C0A80001)
Oct 1 20:15:25.007: Vi1 IPCP: I CONFACK [ACKsent] id 1 len 10
!--- IP address of virtual bundle was previously obtained from the loopback !--- interface. Oct 1 20:15:25.011: Vi1 IPCP: Address 192.168.0.2 (0x0306C0A80002) Oct 1 20:15:25.015: Vi1 IPCP: State is Open *!--- Adds route for virtual bundle to routing table to reach the remote router.*
Oct 1 20:15:25.039: **Vi1 IPCP: Install route to 192.168.0.1**
Oct 1 20:15:25.947: **%LINEPROTO-5-UPDOWN: Line protocol on Interface Virtual-Access1, changed state to up**
Oct 1 20:15:31.199: %OSPF-5-ADJCHG: Process 1, Nbr 192.168.0.1 on Virtual-Access1 from LOADING to FULL, Loading Done

Oct 1 20:18:01.439: **As10 LCP: I CONFREQ [Closed] id 61 len 39**
Oct 1 20:18:01.443: As10 LCP: ACCM 0x000A0000 (0x0206000A0000)
Oct 1 20:18:01.447: As10 LCP: AuthProto CHAP (0x0305C22305)
Oct 1 20:18:01.451: As10 LCP: MagicNumber 0x57DA0D94 (0x050657DA0D94)
Oct 1 20:18:01.451: As10 LCP: PFC (0x0702)
Oct 1 20:18:01.455: As10 LCP: ACFC (0x0802)
Oct 1 20:18:01.455: As10 LCP: MRRU 1524 (0x110405F4)
Oct 1 20:18:01.459: As10 LCP: EndpointDisc 1 Router2 (0x130A01526F7574657232)
Oct 1 20:18:01.463: As10 LCP: Lower layer not up, Fast Starting

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Oct 1 20:18:01.467: As10 PPP: Treating connection as a dedicated line
Oct 1 20:18:01.467: As10 PPP: Phase is ESTABLISHING, Active Open [0 sess, 0 load]
Oct 1 20:18:01.475: As10 LCP: O CONFREQ [Closed] id 30 len 39
Oct 1 20:18:01.475: As10 LCP: ACCM 0x000A0000 (0x0206000A0000)
Oct 1 20:18:01.479: As10 LCP: AuthProto CHAP (0x0305C22305)
Oct 1 20:18:01.483: As10 LCP: MagicNumber 0x0791992D (0x05060791992D)
Oct 1 20:18:01.483: As10 LCP: PFC (0x0702)
Oct 1 20:18:01.487: As10 LCP: ACFC (0x0802)
Oct 1 20:18:01.491: As10 LCP: MRRU 1524 (0x110405F4)
Oct 1 20:18:01.491: As10 LCP: EndpointDisc 1 Router1 (0x130A01526F7574657231)
Oct 1 20:18:01.499: As10 LCP: O CONFACK [REQsent] id 61 len 39
Oct 1 20:18:01.503: As10 LCP: ACCM 0x000A0000 (0x0206000A0000)
Oct 1 20:18:01.507: As10 LCP: AuthProto CHAP (0x0305C22305)
Oct 1 20:18:01.507: As10 LCP: MagicNumber 0x57DA0D94 (0x050657DA0D94)
Oct 1 20:18:01.511: As10 LCP: PFC (0x0702)
Oct 1 20:18:01.511: As10 LCP: ACFC (0x0802)
Oct 1 20:18:01.515: As10 LCP: MRRU 1524 (0x110405F4)
Oct 1 20:18:01.519: As10 LCP: EndpointDisc 1 Router2 (0x130A01526F7574657232)
Oct 1 20:18:01.531: %LINK-3-UPDOWN: Interface Async10, changed state to up
Oct 1 20:18:01.703: As10 LCP: I CONFACK [ACKsent] id 30 len 39
Oct 1 20:18:01.703: As10 LCP: ACCM 0x000A0000 (0x0206000A0000)
Oct 1 20:18:01.707: As10 LCP: AuthProto CHAP (0x0305C22305)
Oct 1 20:18:01.711: As10 LCP: MagicNumber 0x0791992D (0x05060791992D)
Oct 1 20:18:01.715: As10 LCP: PFC (0x0702)
Oct 1 20:18:01.715: As10 LCP: ACFC (0x0802)
Oct 1 20:18:01.719: As10 LCP: MRRU 1524 (0x110405F4)
Oct 1 20:18:01.723: As10 LCP: EndpointDisc 1 Router1 (0x130A01526F7574657231)
Oct 1 20:18:01.723: As10 LCP: State is Open
Oct 1 20:18:01.727: As10 PPP: Phase is AUTHENTICATING, by both [0 sess, 0 load]
Oct 1 20:18:01.731: As10 CHAP: O CHALLENGE id 25 len 28 from "Router1"
Oct 1 20:18:01.743: As10 CHAP: I CHALLENGE id 30 len 28 from "Router2"
Oct 1 20:18:01.755: As10 CHAP: O RESPONSE id 30 len 28 from "Router1"
Oct 1 20:18:01.851: As10 CHAP: I RESPONSE id 25 len 28 from "Router2"
Oct 1 20:18:01.867: As10 CHAP: O SUCCESS id 25 len 4
Oct 1 20:18:01.879: As10 CHAP: I SUCCESS id 30 len 4
Oct 1 20:18:01.879: As10 PPP: Phase is VIRTUALIZED [0 sess, 0 load]
Oct 1 20:18:01.891: Vi1 MLP: Added link As10 to bundle Router2
Oct 1 20:18:02.899: %LINEPROTO-5-UPDOWN: Line protocol on Interface Async10,
changed state to up
Router1#

Router2#debug ppp negotiation
PPP protocol negotiation debugging is on

Router2#debug ppp multilink events
Multilink events debugging is on

Router2#debug dialer
Dial on demand events debugging is on

Router2#show debug
   Dial on demand:
   Dial on demand events debugging is on
   PPP:
   PPP protocol negotiation debugging is on
   Multilink events debugging is on


Oct  2 20:15:07.442: %SYS-5-CONFIG_I: Configured from console by console
Oct  2 20:15:08.038: %LINK-3-UPDOWN: Interface Dialer3, changed state to up
Oct  2 20:15:08.046: Se3 DDR: rotor dialout [priority]
!--- Dialing Reason Oct 2 20:15:08.050: Se3 DDR: Dialing cause ip (s=192.168.0.1, d=224.0.0.5)
!--- Number being dialed Oct 2 20:15:08.054: Se3 DDR: Attempting to dial 30116
Oct  2 20:15:08.058: CHAT3: Attempting async line dialer script
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!--- Using chat script "test" for dialout Oct 2 20:15:08.058: CHAT3: Dialing using Modem script: test & System script: none Oct 2 20:15:08.066: CHAT3: process started Oct 2 20:15:08.070: CHAT3: Asserting DTR Oct 2 20:15:08.070: CHAT3: Chat script test started *!--- Call being established; note the time elapsed for call setup.* Oct 2 20:15:35.814: CHAT3: Chat script test finished, status = Success Oct 2 20:15:35.830: Di3 IPCP: Install route to 192.168.0.2 *! -- Physical Layer (Serial Interface) is up. !--- Only now can PPP negotiation begin.* Oct 2 20:15:37.818: **%LINK-3-UPDOWN: Interface Serial3, changed state to up**
Oct 2 20:15:37.822: Se3 DDR: Dialer statechange to up
Oct 2 20:15:37.822: Se3 DDR: Dialer call has been placed
!--- PPP negotiation begins Oct 2 20:15:37.826: Se3 PPP: Treating connection as a callout *!--- PPP Phase is ESTABLISHING. LCP negotiation will now occur* Oct 2 20:15:37.826: Se3 PPP: Phase is ESTABLISHING, Active Open [0 sess, 0 load] *!--- Outgoing CONFREQ with Field ID 81* Oct 2 20:15:37.834: Se3 LCP: **O CONFREQ [Closed] id 81 len 39**
Oct 2 20:15:37.838: Se3 LCP: ACCM 0x000A0000 (0x0206000A0000)
!--- This router is requesting: ! -- Option: Authentication Protocol, Value: CHAP ! -- Option: MagicNumber (used to detect loopbacks and is always sent) Oct 2 20:15:37.838: **Se3 LCP: AuthProto CHAP** (0x0305C22305)
Oct 2 20:15:37.842: **Se3 LCP: MagicNumber 0x57D7985D** (0x050657D7985D)
Oct 2 20:15:37.846: Se3 LCP: PFC (0x0702)
Oct 2 20:15:37.846: Se3 LCP: ACFC (0x0802)
! -- Negotiate Maximum Receive Reconstructed Unit (MRRU) ! -- MRRU is the maximum packet size this end will reconstruct Oct 2 20:15:37.850: Se3 LCP: MRRU 1524 (0x110405F4) Oct 2 20:15:37.854: Se3 LCP: EndpointDisc 1 Router2 (0x130A01526F7574657232) *! -- Incoming CONFREQ. ID field is 52* Oct 2 20:15:38.162: Se3 LCP: I CONFREQ [REQsent] id 52 len 39 Oct 2 20:15:38.166: Se3 LCP: ACCM 0x000A0000 (0x0206000A0000) *! -- The peer has requested: ! -- Option: Authentication Protocol, Value: CHAP ! -- Option: MagicNumber (used to detect loopbacks and is always sent)* Oct 2 20:15:38.166: Se3 LCP: AuthProto CHAP (0x0305C22305) Oct 2 20:15:38.170: Se3 LCP: MagicNumber 0x078F2456 (0x0506078F2456) Oct 2 20:15:38.174: Se3 LCP: PFC (0x0702) Oct 2 20:15:38.174: Se3 LCP: ACFC (0x0802) Oct 2 20:15:38.178: Se3 LCP: MRRU 1524 (0x110405F4) Oct 2 20:15:38.182: Se3 LCP: EndpointDisc 1 Router1 (0x130A01526F7574657231) *! -- Outgoing CONFACK for message with Field ID 52* Oct 2 20:15:38.186: **Se3 LCP: O CONFACK [REQsent] id 52** len 39
Oct 2 20:15:38.190: Se3 LCP: ACCM 0x000A0000 (0x0206000A0000)
Oct 2 20:15:38.194: **Se3 LCP: AuthProto CHAP** (0x0305C22305)
Oct 2 20:15:38.198: **Se3 LCP: MagicNumber 0x078F2456** (0x0506078F2456)
Oct 2 20:15:38.198: Se3 LCP: PFC (0x0702)
Oct 2 20:15:38.202: Se3 LCP: ACFC (0x0802)
Oct 2 20:15:38.202: Se3 LCP: MRRU 1524 (0x110405F4)
Oct 2 20:15:38.206: Se3 LCP: EndpointDisc 1 Router1 (0x130A01526F7574657231)
! -- Incoming CONFACK for message with Field ID 81 Oct 2 20:15:38.214: Se3 LCP: I CONFACK [ACKsent] id 81 len 39 Oct 2 20:15:38.214: Se3 LCP: ACCM 0x000A0000 (0x0206000A0000) Oct 2 20:15:38.218: **Se3 LCP: AuthProto CHAP** (0x0305C22305)
Oct 2 20:15:38.222: **Se3 LCP: MagicNumber 0x57D7985D** (0x050657D7985D)
Oct 2 20:15:38.222: Se3 LCP: PFC (0x0702)
Oct 2 20:15:38.226: Se3 LCP: ACFC (0x0802)
! -- Both sides have CONFACKed the parameters ! -- MRRU of 1524 bytes and the Endpoint Discriminator have been negotiated Oct 2 20:15:38.230: Se3 LCP: MRRU 1524 (0x110405F4) Oct 2 20:15:38.230: Se3 LCP: EndpointDisc 1 Router2 (0x130A01526F7574657232 *! -- LCP negotiation complete and LCP state goes to Open* Oct 2 20:15:38.234: **Se3 LCP: State is Open**
! -- PPP Phase is AUTHENTICATING. PPP Authentication occurs now ! -- Two-way authentication will be performed (indicated by the both keyword) Oct 2 20:15:38.238: Se3 PPP: Phase is AUTHENTICATING, by both [0 sess, 0 load] *! -- Outgoing CHAP Challenge. ! -- In LCP we had agreed upon CHAP as the authentication protocol* Oct 2 20:15:38.238: Se3 CHAP: O CHALLENGE id 40 len 28 from "Router2" *! -- Incoming Challenge from peer* Oct 2 20:15:38.398: Se3 CHAP: I CHALLENGE id 45 len 28 from "Router1" *! -- Incoming response from peer* Oct 2 20:15:38.402: Se3 CHAP: I RESPONSE id 40 len 28 from "Router1" *! -- Outgoing Response* Oct 2 20:15:38.410: Se3 CHAP: O RESPONSE id 45 len 28 from "Router2" *! -- CHAP authentication successful* Oct 2 20:15:38.418: Se3 CHAP: O SUCCESS id 40 len 4 Oct 2 20:15:38.538: Se3 CHAP: I SUCCESS id 45 len 4 Oct 2 20:15:38.542: Se3 MLP: Request add link to bundle *! -- Virtualize Se3 ! -- Virtual Access interface will represent the MP bundle* Oct 2 20:15:38.542: Se3 PPP: Phase is VIRTUALIZED [0 sess, 1 load] Oct 2 20:15:38.546: Se3 MLP: Adding link to bundle Oct 2 20:15:38.550: Vi1 PPP: Phase is DOWN, Setup [0 sess, 0 load] Oct 2 20:15:38.558: Vi1 PPP: No remote authentication for call-out Oct 2 20:15:38.566: Vi1 MLP: Added to huntgroup Di3 Oct 2 20:15:38.570: Vi1 MLP: Clone from Di3 Oct 2 20:15:38.574: %LINK-3-UPDOWN: Interface Virtual-Access1, changed state to up Oct 2 20:15:38.578:

Vi1 DDR: Dialer statechange to up *! -- Virtual Access Interface is up ! -- Negotiate LCP and PPP parameters for Virtual-Access Interface* Oct 2 20:15:38.582: Vi1 DDR: Dialer call has been placed Oct 2 20:15:38.586: Vi1 PPP: Treating connection as a callout Oct 2 20:15:38.586: Vi1 PPP: Phase is ESTABLISHING, Active Open [0 sess, 0 load] Oct 2 20:15:38.594: Vi1 LCP: O CONFREQ [Closed] id 1 len 29 Oct 2 20:15:38.594: Vi1 LCP: AuthProto CHAP (0x0305C22305) Oct 2 20:15:38.598: Vi1 LCP: MagicNumber 0x57D79B57 (0x050657D79B57) Oct 2 20:15:38.602: Vi1 LCP: MRRU 1524 (0x110405F4) Oct 2 20:15:38.606: Vi1 LCP: EndpointDisc 1 Router2 (0x130A01526F7574657232 Oct 2 20:15:38.614: Vi1 PPP: Phase is UP [0 sess, 0 load] Oct 2 20:15:38.618: Vi1 IPCP: O CONFREQ [Closed] id 1 len 10 Oct 2 20:15:38.622: Vi1 IPCP: Address 192.168.0.1 (0x0306C0A80001) *! -- First multilink connection is brought up in the virtual access interface* Oct 2 20:15:38.626: **Vi1 MLP: Added first link Se3 to bundle Router1**
Oct 2 20:15:38.630: Di3 IPCP: Remove route to 192.168.0.2
Oct 2 20:15:39.542: **%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial3, changed state to up**
Oct 2 20:15:39.614: **%LINEPROTO-5-UPDOWN: Line protocol on Interface Virtual-Access1, changed state to up**
Oct 2 20:15:40.614: Vi1 IPCP: TIMEout: State REQsent
Oct 2 20:15:40.618: Vi1 IPCP: O CONFREQ [REQsent] id 2 len 10
Oct 2 20:15:40.618: Vi1 IPCP: Address 192.168.0.1 (0x0306C0A80001)
Oct 2 20:15:41.046: Vi1 MLP: Load (1) above threshold in bundle Router1
Oct 2 20:15:41.046: Se2 DDR: rotor dialout [priority]
Oct 2 20:15:41.050: Se2 DDR: Attempting to dial 30116
Oct 2 20:15:41.054: CHAT2: Attempting async line dialer script
Oct 2 20:15:41.054: CHAT2: Dialing using Modem script:
test & System script: none
Oct 2 20:15:41.062: CHAT2: process started
Oct 2 20:15:41.066: CHAT2: Asserting DTR
Oct 2 20:15:41.066: CHAT2: Chat script test started
Oct 2 20:15:42.506: Vi1 IPCP: I CONFREQ [REQsent] id 1 len 10
Oct 2 20:15:42.510: Vi1 IPCP: Address 192.168.0.2 (0x0306C0A80002)
Oct 2 20:15:42.514: Vi1 IPCP: O CONFACK [REQsent] id 1 len 10
Oct 2 20:15:42.518: Vi1 IPCP: Address 192.168.0.2 (0x0306C0A80002)
Oct 2 20:15:42.530: Vi1 IPCP: I CONFACK [ACKsent] id 1 len 10
Oct 2 20:15:42.534: Vi1 IPCP: Address 192.168.0.1 (0x0306C0A80001)
Oct 2 20:15:42.538: Vi1 IPCP: ID 1 didn't match 2, discarding packet
Oct 2 20:15:42.546: Vi1 IPCP: I CONFACK [ACKsent] id 2 len 10
Oct 2 20:15:42.550: Vi1 IPCP: Address 192.168.0.1 (0x0306C0A80001)
Oct 2 20:15:42.554: Vi1 IPCP: State is Open
Oct 2 20:15:42.562: Vi1 DDR: dialer protocol up
Oct 2 20:15:42.570: Vi1 DDR: Call connected, 4 packets unqueued,
4 transmitted 0 discarded
! -- Adds route for virtual bundle to routing table to reach the remote router Oct 2 20:15:42.582: Di3 IPCP: Install route to 192.168.0.2 **Oct 2 20:15:48.714: %OSPF-5-ADJCHG: Process 1, Nbr 192.168.0.2 on Dialer3 from LOADING to FULL, Loading Done**

Oct 2 20:17:41.070: CHAT2: Chat script test finished, status = Connection timed out; remote host not responding
Oct 2 20:17:41.074: Se2 DDR: disconnecting call
Oct 2 20:17:56.074: Se2 DDR: re-enable timeout
Oct 2 20:17:56.074: Se2 DDR: Attempting to dial 30114
Oct 2 20:17:56.078: CHAT2: Attempting async line dialer script
Oct 2 20:17:56.078: CHAT2: Dialing using Modem script: test & System script: none
Oct 2 20:17:56.086: CHAT2: process started
Oct 2 20:17:56.090: CHAT2: Asserting DTR
Oct 2 20:17:56.090: CHAT2: Chat script test started
! -- Call is being established; note the time elapsed for call setup Oct 2 20:18:16.890: CHAT2: Chat script test finished, status = Success Oct 2 20:18:18.894: **%LINK-3-UPDOWN: Interface Serial2, changed state to up**
Oct 2 20:18:18.898: Se2 DDR: Dialer statechange to up
Oct 2 20:18:18.898: Se2 DDR: Dialer call has been placed
! -- PPP negotiation begins Oct 2 20:18:18.902: Se2 PPP: Treating connection as a callout Oct 2 20:18:18.906: Se2 PPP: Phase is ESTABLISHING, Active Open [0 sess, 0 load] *! -- LCP negotiation*

begins; Multilink parameters are also negotiated Oct 2 20:18:18.910: Se2 LCP: O CONFREQ [Closed] id 61 len 39 Oct 2 20:18:18.914: Se2 LCP: ACCM 0x000A0000 (0x0206000A0000) Oct 2 20:18:18.918: Se2 LCP: AuthProto CHAP (0x0305C22305) Oct 2 20:18:18.918: Se2 LCP: MagicNumber 0x57DA0D94 (0x050657DA0D94) Oct 2 20:18:18.922: Se2 LCP: PFC (0x0702) Oct 2 20:18:18.926: Se2 LCP: ACFC (0x0802) *! -- Negotiate Maximum Receive Reconstructed Unit (MRRU) ! -- MRRU is the maximum packet size this end will reconstruct* Oct 2 20:18:18.926: Se2 LCP: MRRU 1524 (0x110405F4) Oct 2 20:18:18.930: Se2 LCP: EndpointDisc 1 Router2 (0x130A01526F7574657232) Oct 2 20:18:19.142: **Se2 LCP: I CONFREQ [REQsent]** id 30 len 39
Oct 2 20:18:19.146: Se2 LCP: ACCM 0x000A0000 (0x0206000A0000)
Oct 2 20:18:19.146: Se2 LCP: AuthProto CHAP (0x0305C22305)
Oct 2 20:18:19.150: Se2 LCP: MagicNumber 0x0791992D (0x05060791992D)
Oct 2 20:18:19.154: Se2 LCP: PFC (0x0702)
Oct 2 20:18:19.154: Se2 LCP: ACFC (0x0802)
Oct 2 20:18:19.158: Se2 LCP: MRRU 1524 (0x110405F4)
Oct 2 20:18:19.162: Se2 LCP: EndpointDisc 1 Router1 (0x130A01526F7574657231)
Oct 2 20:18:19.166: **Se2 LCP: O CONFACK [REQsent]** id 30 len 39
Oct 2 20:18:19.170: Se2 LCP: ACCM 0x000A0000 (0x0206000A0000)
Oct 2 20:18:19.174: Se2 LCP: AuthProto CHAP (0x0305C22305)
Oct 2 20:18:19.174: Se2 LCP: MagicNumber 0x0791992D (0x05060791992D)
Oct 2 20:18:19.178: Se2 LCP: PFC (0x0702)
Oct 2 20:18:19.178: Se2 LCP: ACFC (0x0802)
Oct 2 20:18:19.182: Se2 LCP: MRRU 1524 (0x110405F4)
Oct 2 20:18:19.186: Se2 LCP: EndpointDisc 1 Router1 (0x130A01526F7574657231)
Oct 2 20:18:19.194: Se2 LCP: I CONFACK [ACKsent] id 61 len 39
Oct 2 20:18:19.198: Se2 LCP: ACCM 0x000A0000 (0x0206000A0000)
Oct 2 20:18:19.198: Se2 LCP: AuthProto CHAP (0x0305C22305)
Oct 2 20:18:19.202: Se2 LCP: MagicNumber 0x57DA0D94 (0x050657DA0D94)
Oct 2 20:18:19.206: Se2 LCP: PFC (0x0702)
Oct 2 20:18:19.206: Se2 LCP: ACFC (0x0802)
Oct 2 20:18:19.210: Se2 LCP: MRRU 1524 (0x110405F4)
Oct 2 20:18:19.214: Se2 LCP: EndpointDisc 1 Router2 (0x130A01526F7574657232)
Oct 2 20:18:19.214: Se2 LCP: State is Open
Oct 2 20:18:19.218: Se2 PPP: Phase is AUTHENTICATING, by both [0 sess, 0 load]
Oct 2 20:18:19.222: Se2 CHAP: O CHALLENGE id 30 len 28 from "Router2"
Oct 2 20:18:19.358: Se2 CHAP: I CHALLENGE id 25 len 28 from "Router1"
Oct 2 20:18:19.362: Se2 CHAP: O RESPONSE id 25 len 28 from "Router2"
Oct 2 20:18:19.382: Se2 CHAP: I RESPONSE id 30 len 28 from "Router1"
Oct 2 20:18:19.390: Se2 CHAP: O SUCCESS id 30 len 4
Oct 2 20:18:19.482: Se2 CHAP: I SUCCESS id 25 len 4
Oct 2 20:18:19.486: Se2 MLP: Request add link to bundle
Oct 2 20:18:19.486: Se2 PPP: Phase is VIRTUALIZED [0 sess, 0 load]
!--- Virtualize Se2 !--- Virtual Access interface will represent the MP bundle Oct 2 20:18:19.490: **Se2 MLP: Adding link to bundle**
!--- Second multilink connection is virtualized and added to Virtual !--- access interface. Oct 2 20:18:19.494: Se2 IPCP: Route to 192.168.0.2 still needed by Vi1 Oct 2 20:18:19.498: DDR: MLP bundle, 0 packets unqueued and discarded Oct 2 20:18:19.498: Vi1 MLP: Added link Se2 to bundle Router1 Oct 2 20:18:20.482: **%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2, changed state to up**

Dépannage des commandes

Certaines commandes **show** sont prises en charge par l'Output Interpreter Tool (clients enregistrés uniquement), qui vous permet de voir une analyse de la sortie de la commande show.

Note: Avant d'exécuter les commandes **debug**, référez-vous à la section **Informations importantes sur les commandes Debug**.

- **debug ppp negotiation** - Pour voir si un client passe la négociation PPP ; ce commnad est

utilisé pour vérifier la négociation d'adresse.

- **debug ppp authentication** - Pour voir si un client passe l'authentification. Si vous utilisez une version du logiciel Cisco IOS avant 11.2, utilisez la commande de debug ppp chap à la place.
- **debug ppp error** - Pour afficher des erreurs de protocole et des statistiques sur les erreurs a associé avec la négociation et l'exécution de connexion PPP.
- **debug vtemplate** - Pour afficher le modèle virtuel copiant pour former une interface d'Access virtuelle.
- **événements de multilink de debug ppp** - Pour voir le débogage d'événements de ppp multilink. Affiche des informations au sujet des événements affectant des multilinks group.
- **mettez au point le numéroteur** - Pour afficher les informations de débogage au sujet des paquets reçus sur une interface de numérotation.
- **show caller** - Les affichages statistiques ou mettent au point les informations pour des connexions.
- **show dialer** - Affiche les informations générales de diagnostic pour des interfaces configurées pour le DDR.
- **utilisateur de show caller** - Les affichages répertorient dont l'utilisateur utilise qui port de modem.
- **show ppp multilink** - Pour voir les membres de l'ensemble multiliaison.

Informations connexes

- Configurer le NAS pour l'accès commuté de base
- Configurer les Concentrateurs existants DDR
- Affichage des statistiques sur l'appelant
- RFC 1717 de PPP à liaisons multiples RFC 1717 de PPP à liaisons multiples
- Configurant le pair pour scruter DDR avec des Profils de composeur
- Accès aux pages d'assistance technologique
- Support technique - Cisco Systems