Terug naar back G.SHDSL-verbinding configureren in CO2-CPE Setup

Inhoud

Inleiding

Dit document beschrijft de configuratiestappen die nodig zijn om een back-to-back verbinding van symmetrische snelle DSL (G.SHDSL) tussen twee EHWIC-4SHDSL-EA modules te implementeren.

U dient één uiteinde van de verbinding in de CO-modus (Central Office) en het andere uiteinde in de CPE-modus (Customer Premises Equipment) te configureren om de SHDSL-verbinding op te heffen. Dit type van een back-to-back SHDSL-verbinding wordt algemeen geïmplementeerd binnen een campusnetwerk om de connectiviteit tussen twee gebouwen te bieden zonder de noodzaak van een Digital Subscriber Line Access Multiplexer (DSLAM) tussen de twee DSL-routers.

Voorwaarden

Vereisten

Cisco raadt kennis van de volgende onderwerpen aan:

- EHWIC-4SHDSL-EA module
- Vaste geïntegreerde services router (ISR) G2 routers zoals C888EA-K9 werken in zowel CO- als CPE-modi met Cisco IOS®-software 15.2(2)T2 en later releases

Gebruikte componenten

Dit document is niet beperkt tot specifieke software- en hardware-versies.

De set is echter met deze apparaten gebouwd:

- Twee ISR Generation-2 routers (CISCO 2901/K9) geladen met Cisco IOS® 15.4.3M2
- Twee EHWIC-4SHDSL-EA modules geïnstalleerd op beide ISR G2-routers
- ANSI/TIA/EIA-568-B kabel met RJ-45 connectors aan beide uiteinden

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.

Configureren

In deze instelling gebruikt u identieke routers met EHWIC-4SHDSL-EA modules die op deze routers zijn geïnstalleerd. Het apparaat met de naam **CO_Router** heeft de SHDSL-controller ingesteld om in CO-modus te werken, terwijl het apparaat met de naam **CPE_Router** de SHDSL-controller is geconfigureerd om in CPE-modus te werken.

De EHWIC-4SHDSL-EA module kan voor zowel Ethernet in de Eerste Mijl (EFM) als Asynchronous Transfer Mode (ATM) worden geconfigureerd. Dit document legt uit hoe u een back-to-back SHDSL-verbinding kunt instellen in zowel de EFM- als de ATM-modus.

Het voorbeeld hier toont hoe u een back-to-back SHDSL-verbinding in ATM-modus kunt instellen.

ATM-modus

U kunt IP over ATM (IPoA) of PPP over ATM (PPPoA)-oplossing uitvoeren wanneer u een back-to-back SHDSL-verbinding configureren.

1. IPoA-oplossing

- CO-router:

```
CO_Router#show running-config
Building configuration...

Current configuration : 1624 bytes
!

!
version 15.4
service config
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname CO_Router
!
boot-start-marker
boot system flash:c2900-universalk9-mz.SPA.154-3.M2.bin
boot-end-marker
!
!
!
no aaa new-model
!
!
```

```
!
ip cef
no ipv6 cef
!
multilink bundle-name authenticated
!
!
!
cts logging verbose
!
!
license udi pid CISCO2901/K9 sn FGL1622241N
license boot module c2900 technology-package securityk9
license boot module c2900 technology-package datak9
!
redundancy
!
!
!
controller SHDSL 0/1/0
 termination co
 dsl-group 0 pairs  0, 1, 2, 3 m-pair
 !


!
!
interface Embedded-Service-Engine0/0
 no ip address
 shutdown
!
interface GigabitEthernet0/0
 ip address dhcp
 duplex auto
 speed auto
!
interface GigabitEthernet0/1
 no ip address
 shutdown
 duplex auto
 speed auto
!
interface ATM0/1/0
 ip address 1.1.1.1 255.255.255.0
 no atm ilmi-keepalive
 pvc 1/10
 !
!
!
ip forward-protocol nd
!
no ip http server
no ip http secure-server
!

control-plane
!
!
line con 0
line aux 0
line vty 0 4
 login
 transport input all
!
```

```
!
end

CO_Router#
```

  • CPE-router:

```
CPE_Router#show running-config
Building configuration...


Current configuration : 1538 bytes
!

version 15.2
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname CPE_Router
!
boot-start-marker
boot-end-marker
!
!
!
no aaa new-model
!
ip cef
!
!

!
no ipv6 cef
!
multilink bundle-name authenticated
!

!
!
voice-card 0
!

!
!
!
license udi pid CISCO2901/K9 sn FGL151625KN
license boot module c2900 technology-package securityk9
license boot module c2900 technology-package uck9
license boot module c2900 technology-package datak9
!
!
!
redundancy

!
controller SHDSL 0/1/0
 dsl-group 0 pairs  0, 1, 2, 3 m-pair
 !


!
```

```
interface Embedded-Service-Engine0/0
 no ip address
 shutdown
!
interface GigabitEthernet0/0
 no ip address
 shutdown
 duplex auto
 speed auto
!
interface GigabitEthernet0/1
 ip address dhcp
 duplex auto
 speed auto
!
interface ATM0/1/0
 ip address 1.1.1.2 255.255.255.0
 no atm ilmi-keepalive
 pvc 1/10
 !
!
!
ip forward-protocol nd
!
no ip http server
no ip http secure-server
!
!
control-plane
!
!
gatekeeper
 shutdown
!
!
!
line con 0
line aux 0
line vty 0 4
 login
 transport input all

!
end

CPE_Router#
```

2. PPPoA-oplossing

- CO-router:

```
CO_Router#show running-config
Building configuration...

Current configuration : 1779 bytes
!

!
version 15.4
service config
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
```

```
!
hostname CO_Router
!
boot-start-marker
boot system flash:c2900-universalk9-mz.SPA.154-3.M2.bin
boot-end-marker
!
!
!
no aaa new-model
!

!
ip cef
no ipv6 cef
!
multilink bundle-name authenticated
!
!
!
cts logging verbose
!
!
license udi pid CISCO2901/K9 sn FGL1622241N
license boot module c2900 technology-package securityk9
license boot module c2900 technology-package datak9
!

!
redundancy
!
!
controller SHDSL 0/1/0
 termination co
 dsl-group 0 pairs  0, 1, 2, 3 m-pair
 !
interface Embedded-Service-Engine0/0
 no ip address
 shutdown
!
interface GigabitEthernet0/0
 ip address dhcp
 duplex auto
 speed auto
!
interface GigabitEthernet0/1
 no ip address
 shutdown
 duplex auto
 speed auto
!
interface ATM0/1/0
 no ip address
 no atm ilmi-keepalive
 pvc 1/10
  encapsulation aal5snap
  protocol ppp dialer
  dialer pool-member 1
 !
!
interface Dialer1
 ip address 1.1.1.1 255.255.255.0
 encapsulation ppp
 dialer pool 1
```

```
 dialer-group 1
!
!
ip forward-protocol nd
!
no ip http server
no ip http secure-server
!


!
!
control-plane
!
!
!
line con 0
line aux 0
line vty 0 4
 login
 transport input all


!
end

CO_Router#
```

- CPE-router:

```
CPE_Router#show running-config
Building configuration...


Current configuration : 1693 bytes
!

version 15.2
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname CPE_Router
!
boot-start-marker
boot-end-marker
!
!
!
no aaa new-model
!
ip cef
!


!
no ipv6 cef
!
multilink bundle-name authenticated
!


!
!
license udi pid CISCO2901/K9 sn FGL151625KN
```

```
license boot module c2900 technology-package securityk9
license boot module c2900 technology-package uck9
license boot module c2900 technology-package datak9
!
!
!
redundancy
!
!
controller SHDSL 0/1/0
 dsl-group 0 pairs  0, 1, 2, 3 m-pair
 !
interface Embedded-Service-Engine0/0
 no ip address
 shutdown
!
interface GigabitEthernet0/0
 no ip address
 shutdown
 duplex auto
 speed auto
!
interface GigabitEthernet0/1
 ip address dhcp
 duplex auto
 speed auto
!
interface ATM0/1/0
 no ip address
 no atm ilmi-keepalive
 pvc 1/10
  encapsulation aal5snap
  protocol ppp dialer
  dialer pool-member 1
 !
!
interface Dialer1
 ip address 1.1.1.2 255.255.255.0
 encapsulation ppp
 dialer pool 1
 dialer-group 1
!
!
ip forward-protocol nd
!
no ip http server
no ip http secure-server
!
control-plane
!
gatekeeper
 shutdown
!
line con 0
line aux 0
line vty 0 4
 login
 transport input all

!
end

CPE_Router#
```

3. PPPoE over ATM-oplossing

- CO-router:

```
CO_Router#show running-configuration
Building configuration...


Current configuration : 2299 bytes
!

version 15.4
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname CO_Router
!
boot-start-marker
boot-end-marker
!

no aaa new-model
!

username cisco password 0 cisco
!
redundancy
!
!
controller SHDSL 0/1/0
termination co dsl-group 0 pairs 0, 1, 2, 3 m-pair
 !
!

bba-group pppoe global
 virtual-template 1
!
!
interface Loopback0
 ip address 10.1.1.1 255.255.255.255
!
interface Embedded-Service-Engine0/0
 no ip address
 shutdown
!
interface GigabitEthernet0/0
 no ip address
 shutdown
 duplex auto
 speed auto

!
interface GigabitEthernet0/1
 no ip address
 shutdown
 duplex auto
 speed auto
!

!
interface ATM0/1/0
```

```
 no ip address
 no atm ilmi-keepalive
!
interface ATM0/1/0.1 point-to-point
 pvc 1/100
  protocol pppoe group global
 !
!
interface Virtual-Template1
 ip unnumbered Loopback0
 ip mtu 1492
 peer default ip address pool PPPOE
!
!
ip local pool PPPOE 10.1.1.2 10.1.1.254

!
line con 0
line aux 0
line vty 0 4
 login
 transport input all

end

CO_Router#
```

Verification:

```
CO_Router#show caller ip
  Line           User        IP Address     Local Number    Remote Number    <->
  Vi1.1          -           10.1.1.2       -               -                in
CO_Router#
```

- CPE-router:

```
CPE_Router#show running-config
Building configuration...


Current configuration : 2554 bytes
!
!
version 15.4
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname CPE_Router
!
boot-start-marker
boot-end-marker
!
!
!
no aaa new-model
!

ip cef
no ipv6 cef
!
multilink bundle-name authenticated
!
```

```
controller SHDSL 0/1/0
dsl-group 0 pairs  0, 1, 2, 3 m-pair
 !
!

!
interface Embedded-Service-Engine0/0
 no ip address
 shutdown
!
interface GigabitEthernet0/0
 ip address dhcp
 duplex auto
 speed auto
!
interface GigabitEthernet0/1
 no ip address
 duplex auto
 speed auto
!
interface GigabitEthernet0/2
 ip address dhcp
 duplex auto
 speed auto
!
interface ATM0/1/0
 no ip address
 no atm ilmi-keepalive
!
interface ATM0/1/0.1 point-to-point
 pvc 1/100
  pppoe-client dial-pool-number 1
 !
!
interface Dialer1
 ip address negotiated
 encapsulation ppp
 dialer pool 1
 ppp chap hostname cisco
 ppp chap password 0 cisco
!
!

!
control-plane
!
 !

line con 0
line aux 0
line vty 0 4
 login
 transport input all
!
!
end


CPE_Router#


Verification:


CPE_Router#show ip interface brief
Interface                  IP-Address      OK? Method Status                Protocol
```

```
Embedded-Service-Engine0/0 unassigned      YES NVRAM  administratively down down
ATM0/1/0                    unassigned      YES unset  up                   up
ATM0/1/0.1                  unassigned      YES unset  up                   up
Dialer1                     10.1.1.2        YES IPCP   up                   up
Virtual-Access1             unassigned      YES unset  up                   up
CPE_Router#
```

EFM-modus

U kunt of IPoE of PPPoE oplossing uitvoeren wanneer u terug-to-back SHDSL verbinding vormt.

1. IPoE-oplossing

- CO-router:

```
CO_Router#show running-config
Building configuration...


Current configuration : 2194 bytes
!
! Last configuration change at 14:56:53 UTC Thu Mar 10 2016
!
version 15.4
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname CO_Router
!
boot-start-marker
boot system flash:c2900-universalk9-mz.SPA.154-3.M2.bin
boot-end-marker
!


!
ip cef
no ipv6 cef
multilink bundle-name authenticated
!

!
cts logging verbose
!

!
redundancy
!

!
controller SHDSL 0/3/0
 termination co
 mode efm
 dsl-group 0 pairs  0, 1, 2, 3 efm-bond
 !

!
interface Embedded-Service-Engine0/0
 no ip address
 shutdown
```

```
!
interface GigabitEthernet0/0
 no ip address
 duplex auto
 speed auto
!
interface GigabitEthernet0/1
 no ip address
 duplex auto
 speed auto
!
!
interface Ethernet0/3/0
 ip address 1.1.1.1 255.255.255.252
!
!
ip forward-protocol nd
!
no ip http server
no ip http secure-server
!


!
control-plane
!


gatekeeper
 shutdown
!


line con 0
line aux 0
line vty 0 4
 login
 transport input all
!
scheduler allocate 20000 1000
!
end

CO_Router#
```

- CPE-router:

```
CPE_Router#show running-config
Building configuration...

Current configuration : 1646 bytes
!
! Last configuration change at 14:50:55 UTC Thu Mar 10 2016
!
version 15.4
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname CPE_Router
!
boot-start-marker
boot system flash:c2900-universalk9-mz.SPA.154-3.M2.bin
boot-end-marker
!
!
```

```
no aaa new-model
!

ip cef
no ipv6 cef
!
multilink bundle-name authenticated
!

cts logging verbose
!

redundancy
!

controller SHDSL 0/3/0
 mode efm
 dsl-group 0 pairs  0, 1, 2, 3 efm-bond
  !

!
interface Embedded-Service-Engine0/0
 no ip address
 shutdown
!
interface GigabitEthernet0/0
 ip address dhcp
 duplex auto
 speed auto
!
interface GigabitEthernet0/1
 no ip address
 duplex auto
 speed auto
!
interface Ethernet0/3/0
 ip address 1.1.1.2 255.255.255.252
!
!
ip forward-protocol nd
!
no ip http server
no ip http secure-server
!

control-plane
!

line con 0
line aux 0
line vty 0 4
 login
 transport input all
!
scheduler allocate 20000 1000
!
end

CPE_Router#
```

2. PPPoE-oplossing

- CO-router:

```
CO_Router#show running-config
Building configuration...

Current configuration : 1851 bytes
!
! Last configuration change at 15:00:06 UTC Thu Mar 10 2016
!
version 15.4
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname CO_Router
!
boot-start-marker
boot system flash:c2900-universalk9-mz.SPA.154-3.M2.bin
boot-end-marker
!

ip cef
no ipv6 cef
!
multilink bundle-name authenticated
!

cts logging verbose
!

controller SHDSL 0/3/0
 mode efm
 dsl-group 0 pairs  0, 1, 2, 3 efm-bond
 !

bba-group pppoe global
 virtual-template 1
!
!
interface Embedded-Service-Engine0/0
 no ip address
 shutdown
!
interface GigabitEthernet0/0
 ip address dhcp
 duplex auto
 speed auto
!
interface GigabitEthernet0/1
 no ip address
 duplex auto
 speed auto
!
interface Ethernet0/3/0
 ip address 1.1.1.2 255.255.255.252
 pppoe enable group global
!
interface Virtual-Template1
 mtu 1492
 ip unnumbered Ethernet0/3/0
 peer default ip address pool PPPOE
!
!
ip local pool PPPOE 1.1.1.1
```

```
!
no ip http server
no ip http secure-server
!

control-plane
!

line con 0
line aux 0
line vty 0 4
 login
 transport input all
!
scheduler allocate 20000 1000
!
end
```

CO_Router#

- CPE-router:

CPE_Router#show running-config
```
Building configuration...


Current configuration : 2310 bytes
!
! Last configuration change at 15:10:04 UTC Thu Mar 10 2016
!
version 15.4
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname CPE_Router
!
boot-start-marker
boot system flash:c2900-universalk9-mz.SPA.154-3.M2.bin
boot-end-marker
!
!
ip cef
no ipv6 cef
multilink bundle-name authenticated
!
!
!
!
!
!
cts logging verbose
!
!
voice-card 0
!
!
!
!
!
redundancy
```

```
!
controller SHDSL 0/3/0
 termination co
 mode efm
 dsl-group 0 pairs  0, 1, 2, 3 efm-bond
 !
!
!
!
!
!
interface Embedded-Service-Engine0/0
 no ip address
 shutdown
!
interface GigabitEthernet0/0
 no ip address
 duplex auto
 speed auto
!
interface GigabitEthernet0/1
 no ip address
 duplex auto
 speed auto
!

!
interface Ethernet0/3/0
 no ip address
 pppoe enable group global
 pppoe-client dial-pool-number 1
!
interface Dialer1
 ip address negotiated
 encapsulation ppp
 dialer pool 1
!
!
ip forward-protocol nd
!
no ip http server
no ip http secure-server
!

!
!
!
!
control-plane
!
 !
 !
!
gatekeeper
 shutdown
!
!
!
line con 0
line aux 0
line vty 0 4
 login
 transport input all
!
```

```
scheduler allocate 20000 1000
!
end
```

CPE_Router#

Verifiëren

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

1. Om te controleren of de router in de CO-modus staat, **voert u de** opdracht **show uit**. De CO ontslaglijn in de output (vet in het voorbeeld) geeft aan dat de router in CO modus staat. De standaardmodus zou CPE zijn. Een deel van de uitvoer wordt hier niet weergegeven, korter.

CO# **show controllers shdSL 0/1/0**

```
Controller SHDSL 0/1/0 is UP Hardware is EHWIC-4SHDSL-EA, rev 0 on slot 0, hwic slot 1
Capabilities: EFM: 2-wire, EFM-Bond, Annex A, B, F & G ATM: 2-wire, Mpair, IMA, Annex A, B, F &
G
```

- CO-beëindiging:

```
cdb=0x3CF085F0, plugin=0x21C33C1C, ds=0x21C33C68 base=0x10200000

FPGA Version is A14

NPU Source: System

NPU Firmware version: SHDSL_EA_FW_20130116053038

Vendor: Infineon, Chipset: SOCRATES-4e

PHY Source: System

IDC Firmware version: 1.7.5.0

DFE Firmware version: 1.1-1.7.5__002

Firmware reload mode: Auto
```

```
<Output abbreviated due to space constraints>
```
2. Voor EFM-modus, **voert u de** Ethernet-opdracht **van** de controllers uit voor verificatie.

3. Voor ATM-modus, **voert u de ATM-**opdracht van **showcontrollers uit** voor verificatie.

Problemen oplossen

Er is momenteel geen specifieke troubleshooting-informatie beschikbaar voor deze configuratie.

Gerelateerde informatie

- Raadpleeg voor gedetailleerde informatie over de verbindingen van SHDSL voor probleemoplossing de configuratie van Cisco G.SHDSL EFM/ATM EHWIC's in Cisco-routers

- Voor problemen oplossen bij PPP-instellingen raadpleegt u het [stroomschema](#) voor [PPP-probleemoplossing](#)
- [Technische ondersteuning en documentatie – Cisco Systems](#)