Configure Back to Back G.SHDSL Connection (Voltar para a conexão G.SHDSL traseira) na configuração do CO-CPE

Contents

Introduction

Este documento descreve as etapas de configuração necessárias para implementar uma conexão back-to-back Multirate Symmetric High-Speed Digital Subscriber Line (G.SHDSL) entre dois módulos EHWIC-4SHDSL-EA.

Você deve configurar uma extremidade da conexão no modo Central Office (CO) e a outra extremidade no modo Customer Premises Equipment (CPE) para ativar a conexão SHDSL. Esse tipo de configuração de conexão SHDSL back-to-back é normalmente implementada em uma rede de campus para fornecer a conectividade entre dois prédios sem a necessidade de um Multiplexador de Acesso de Linha de Assinante Digital (DSLAM - Digital Subscriber Line Access Multiplexer) entre os dois roteadores DSL.

Prerequisites

Requirements

A Cisco recomenda que você tenha conhecimento destes tópicos:

- módulo EHWIC-4SHDSL-EA
- Os roteadores G2 do Roteador de Serviço Integrado Fixo (ISR - Fixed Integrated Service Router), como o C888EA-K9, funcionam nos modos CO e CPE com o software Cisco IOS® 15.2(2)T2 e versões posteriores

Componentes Utilizados

Este documento não se restringe a versões de software e hardware específicas.

No entanto, a configuração é construída com estes dispositivos:

- Dois roteadores ISR Generation-2 (CISCO2901/K9) carregados com Cisco IOS® 15.4.3M2
- Dois módulos EHWIC-4SHDSL-EA instalados em ambos os roteadores ISR G2
- Cabo ANSI/TIA/EIA-568-B com conectores RJ-45 em ambas as extremidades

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

Configurar

Nessa configuração, você usará roteadores idênticos com módulos EHWIC-4SHDSL-EA instalados neles. O dispositivo chamado **CO_Router** tem o controlador SHDSL configurado para operar no modo CO, enquanto o dispositivo chamado **CPE_Router** tem o controlador SHDSL configurado para operar no modo CPE.

O módulo EHWIC-4SHDSL-EA pode ser configurado para Ethernet no First Mile (EFM) e no Asynchronous Transfer Mode (ATM). Este documento explica como configurar a conexão SHDSL back-to-back nos modos EFM e ATM.

O exemplo aqui mostra como configurar a conexão SHDSL back-to-back no modo ATM.

Modo ATM

Você pode implementar a solução IP sobre ATM (IPoA) ou PPP sobre ATM (PPPoA) ao configurar a conexão SHDSL back-to-back.

1. Solução IPoA

- Roteador CO:

```
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#
```

- Roteador CPE:

```
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. Solução PPPoA

- Roteador CO:

```
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#
```

- Roteador CPE:

```
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. Solução PPPoE sobre ATM

- Roteador CO:

```
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#
```

- Roteador CPE:

```
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#
```

Modo EFM

Você pode implementar a solução IPoE ou PPPoE ao configurar a conexão SHDSL back-to-back.

1. Solução IPoE

- Roteador CO:

```
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#
```

- Roteador CPE:

```
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. Solução PPPoE

- Roteador CO:

```
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#

- Roteador CPE:

```
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#
```

Verificar

Use esta seção para confirmar se a sua configuração funciona corretamente.

1. Para verificar se o roteador está no modo CO, execute o comando **show**. A linha de terminação CO na saída (em negrito no exemplo) indica que o roteador está no modo CO. O modo padrão seria CPE. Algumas das saídas não aparecem aqui, para ser breve.

```
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
```

- Terminação de CO:

```
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. Para o modo EFM, execute o comando **show controllers ethernet** para verificação.

3. Para o modo ATM, execute o comando **show controllers atm** para verificação.

Troubleshoot

Atualmente, não existem informações disponíveis específicas sobre Troubleshooting para esta configuração.

Informações Relacionadas

- Para obter informações detalhadas sobre como solucionar problemas de conexões SHDSL,

consulte Configuração de EHWICs Cisco G.SHDSL EFM/ATM em Cisco Routers

- Para a solução de problemas relacionados ao PPP, consulte o Fluxograma de Troubleshooting do PPP
- Suporte Técnico e Documentação - Cisco Systems