

دادعإ يف يف لخل ل G.SHDSL لاصتا نيوكت دعاسم ل CPE

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عمدق م ل

ي ل ا ع ي م ق ر ك ر ت ش م ط خ ل ا ص ت ا ذ ي ف ن ت ل ة ب و ل ط م ل ن ي و ك ت ل ت ا و ط خ د ن ت س م ل ا ذ ه ف ص ي
EHWIC-4SHDSL-4SHDSL-EA ي ت د ح و ن ي ب (G.SHDSL) ف ل خ ل ا ي ل ا ف ل خ ل ا ن م ة ع ر س ل ا د د ع ت م ي ر ط ا ن ت ة ع ر س ل ا

ع ض و ي ف ر خ أ ل ا ف ر ط ل ا و (CO) ي ز ك ر م ل ب ت ك م ل ا ع ض و ي ف ل ا ص ت ا ل ا ي ف ر ط د ح ا ن ي و ك ت ب ج ي
ل ا ص ت ا ن م ع و ن ل ا ا ذ ه ذ ي ف ن ت م ت ي . SHDSL ل ا ص ت ا ر ا ه ا ط ا ل ج ا ن م (CPE) ل ي م ع ل ا ل م ع ن ك ا م ا ت ا د ع م
ن ي ب ل ا ص ت ا ل ا ر ي ف و ت ل ع م ج م ة ك ب ش ل خ ا د ع ن ا ش ل ك ش ب ف ل خ ل ا ي ل ا ف ل خ ل ا ن م ه ج ت م ل SHDSL
DSL ت ا ه ج و م ن ي ب (DSLAM) ي م ق ر ل ا ك ر ت ش م ل ا ط خ ي ل ا ل و ص و ل ا ع ي م ج ت ي ل ا ة ج ا ح ل ا ن و د ن ي ي ن ب م

ةيساس أ ل تاب ل ط م ل

تاب ل ط م ل

ة ي ل ل ا ل ا ع ي ض ا و م ل ا ب ة ف ر ع م ك ي د ل ن و ك ت ن ا ب Cisco ي ص و ت :

- EHWIC-4SHDSL-EA Module ة ي ط م ن ل ا ة د ح و ل ا
- ن م ل ك ي ف C888EA-K9 ل ث م (ISR) ة ت ب ا ث ل ا ة ج م د م ل ا ة م د خ ل ا ت ا ه ج و م ل G2 ت ا ه ج و م ل م ع ت
ش د ح أ ل ا ت ا ر ا د ص ا ل ا و Cisco IOS® 15.2(2)T2 ج م ا ن ر ب ع م CPE و CO ع ا ض و ا

عمدخت س م ل تانوك م ل

ة ن ي ع م ة ي د ا م ت ا ن و ك م و ج م ا ر ب ت ا ر ا د ص ا ي ل ع د ن ت س م ل ا ا ذ ه ر ص ت ق ي ا ل

ة ز ه أ ل ا ه ذ ه م ا د خ ت س ا ب د ا د ع ا ل ا ع ا ش ن ا م ت ي ، ك ل ذ ع م و

- Cisco IOS® 15.4.3M2 ب ن ا ت ل م ح م (Cisco2901/K9) ي ن ا ث ل ل ا ل ي ج ل ا ن م ISR ت ا ه ج و م
- ISR G2 ت ا ه ج و م ا ل ك ي ل ع ن ا ت ت ب ث م EHWIC-4SHDSL-EA ا ت د ح و

• نيفرط يا دنع RJ-45 تال صومب دوزم ANSI/TIA/EIA-568-B لباك
ةصاخ ةيلمعم ةئيې يف ةدوجوملا ةزهجال نم دنتسملا اذه يف ةدراولما تامولعملما عاشن اذمت
تناك اذا (يضا رتفا). حوسمم نيوكتب دنتسملا اذه يف ةمدختسملا ةزهجال اعيمج تادب
رما يال لمحتحملما ريثاتلل كمهف نم دكاتف ، ةرشابم كتكتكبش

نيوكتلا

ةيطمنلا EHWIC-4SHDSL-EA تادجوعم ةقباطم تاهجوم مدختست فوس ، دادعلا اذه يف
مت يتل SHDSL مكحتلا ةدجولع **CO_Router** مسملا زاهجال يوتحي . اهيلع ةتبتملما
مكحتلا ةدجولع **CPE_Router** مسملا زاهجال يوتحي امنيب ، CO عضو يف لمعلل انه نيوكت
SHDSL عضو يف لمعلل انه نيوكت مت يتل SHDSL .

(EFM) لوالا ليملا يف تنرثي نم لك EHWIC-4SHDSL-EA ةيطمنلا ةدجولما نيوكت نكمي
يف فلخال SHDSL لاصتا دادعلا ةيفيكي دنتسملا اذه حرشي . (ATM) نمازتملا ريغل لقلعلا عضو
ATM و EFM عضو نم لك يف

ATM عضو يف فلخال لفلخال نم SHDSL لاصتا دادعلا ةيفيكي لياتلا لاثملا حضوي

ATM عضو

لاصتا نيوكت دنع ATM (PPPoA) ربع PPP و ATM (IPoA) ربع IP لجا اما ذيفنت كنكمي
SHDSL لفلخال لفلخال نم

1. لجا IPoA

- كرتشملا هجوملا:

```
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#

• **مجموعه 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. ج PPPoA

- كرتش مالا هجوم لالا

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#

• **مجموعه 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. ح ر ب ع PPPoE ل ح ATM

• كرت ش م ل ا ه ج و م ل ا


```
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	<->
Vil.1	-	10.1.1.2	-	-	in

CO_Router#

- موجه 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
CPE_Router#

عضو EFM

فلخال لى إفلخال نم SHDSL لاصتا نيوكت دنع PPPoE وأ IPoE لى ذيفنت كنكمي

1. لى IPoE

- كرتشم لى هوم لى :

```
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#

- **موجه 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. حج PPPoE

- كرت شرم لا هج وم لا

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#

• **موجه 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#

ةحصلا نم ققحتلا

ححص لكشب نيوكتلا لمع ديكأتل مسقلا اذه مدختسا

1. في CO اهان إطخ ريشي **show** رمألا ليغشتب مق، CO عضو في هجوملا نأ نم ققحتلل. جارجإلا CPE. يضارتفالا عضو لا نوكي. CO عضو في هجوملا نأ لىلا (لاثلما في دوسا) جارجإلا زاجيلا، انه رهظت ال تاجرملال

```
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
```

- كرتشملا اهانإلا:

```
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. ققحتلل **show controllers ethernet** رمألا ليغشتب مق، EFM عضو ةبسنلاب.

3. ققحتلل **show controllers atm** رمألا ليغشتب مق، ATM عضو ةبسنلاب.

اهحالصإو ااطخألا فاشكتسا

نيوكتلا اذهل اهلصإو ااطخألا فاشكتسال ةدحم تامولعم آيلاح رفوتت ال

ةلص تاذا تامولعم

- اهلصإو SHDSL تالاصتإ ااطخأ فاشكتسال لوح ةيليصفت تامولعم لىل لوصحلل، [Cisco G.SHDSL EFM/ATM EHWICs تالاصتإ نيوكت](#) لىلا عجرا
- [طاطخملا](#) لىلا عجرا، اهلصإو ااطخألا فاشكتساب ةقلعتملا PPP ااطخأ فاشكتسال [اهحالصإو PPP ااطخأ فاشكتسال يبايسنالا](#)

- [تادنت سمل او ینقتلا مرعدلا - Cisco Systems](#)

ةمچرتل هذه لوج

ةللأل تاي نقتل نمة ومة مادختساب دن تسمل اذة Cisco تمةرت
ملاعلاء انء مء مء نمة دختسمل معد و تمة مء دقتل ةر شبل او
امك ةق قء نوك ت نل ةللأل ةمچرت لصف أن ةظحال مء ءرء. ةصاأل مء تءل ب
Cisco ةلخت. فرتمة مچرت مء دقء ةل ةل ةفارتحال ةمچرتل عم لاعل او
ىل إأمءءاد ءوچرلاب ةصوء و تامةرتل هذه ةقء نء اهءل وئس م Cisco
Systems (رفوتم طبارل) ةلصلأل ةزءل ءن إل دن تسمل