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Configuring a Cisco 827 Router With IRB and NAT Using RFC1483 Bridging

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Introduction

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Introduction

This sample configuration shows a Cisco 827 Digital Subscriber Line (DSL) router that is connected to a Cisco 6130 Digital Subscriber Line Access Multiplexer (DSLAM), that terminates on a Cisco 6400 Universal Access Concentrator (UAC).

The Cisco 827, configured with RFC1483 Bridging and integrated routing and bridging (IRB), runs network address translation (NAT).

The Cisco 6400 asynchronous transfer mode (ATM) interface is configured with routed bridge encapsulation (RBE).

For the Cisco 6400, the ATM RBE feature on the Cisco 6400 node route processor (NRP) routes IP over bridged RFC1483 Ethernet traffic from a stub-bridged LAN.

Bridged IP packets received on an ATM interface configured in route-bridged mode are routed via the IP header. The interfaces take advantage of the characteristics of a stub LAN topology commonly used for DSL access and offer increased performance and flexibility over IRB.

Prerequisites

Requirements

There are no specific requirements for this document.

Components Used

The information in this document is based on these software and hardware versions:

- Cisco 827-4V Customer Premises Equipment (CPE) IOS® Software Release 12.1(1)XB
- Cisco 6400 UAC-NRP IOS Software Release 12.0(7)DC
- Cisco 6400 UAC-Node Switch Processor (NSP) IOS Software Release 12.0(4)DB

- Cisco 6130 DSLAM–NI2 IOS Software Release 12.1(1)DA

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.

Conventions

For more information on document conventions, refer to the Cisco Technical Tips Conventions.

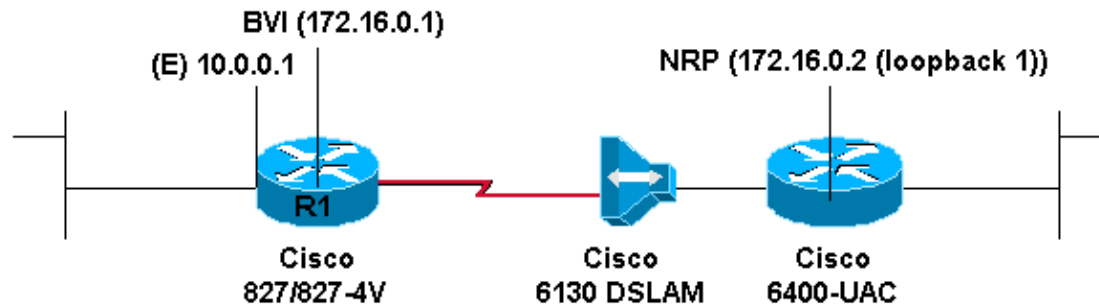
Configure

In this section, you are presented with the information you can use to configure the features described in this document.

Note: In order to find additional information on the commands used in this document, use the Command Lookup Tool (registered customers only) .

Network Diagram

This document uses the network setup shown in this diagram.



Configurations

This document uses these configurations.

- Cisco 827
- Cisco 6400 NRP – Example 1
- Cisco 6400 NRP – Example 2

Cisco 827
<pre> Current configuration: ! version 12.1 service timestamps debug datetime msec service timestamps log datetime msec ! hostname R1 ! ip subnet-zero ! </pre>

```

bridge irb
!
interface Ethernet0
 ip address 10.0.0.1 255.0.0.0
 no ip directed-broadcast
 ip nat inside
 no ip mroute-cache
!
interface ATM0
 no ip address
 no ip directed-broadcast
 no ip mroute-cache
 no atm ilmi-keepalive
 pvc 4/100
  encapsulation aal5snap
!
 bundle-enable
 bridge-group 1
 hold-queue 224 in
!
interface BV11
 ip address 172.16.0.1 255.255.0.0
 no ip directed-broadcast
 ip Nat outside
!
ip Nat inside source list 1 interface BV11 overload
ip classless
ip route 0.0.0.0 0.0.0.0 <next hop IP address>

!--- The next hop IP address is also called the
!--- default gateway and is provided by your ISP.
!--- For this example, one valid default gateway
!--- can be the loopback interface of the
!--- Cisco 6400 NRP, 172.16.0.2.

no ip http server
!
access-list 1 permit 10.0.0.0 0.255.255.255
bridge 1 protocol ieee
 bridge 1 route ip
!
voice-port 1
 timing hookflash-in 0
!
voice-port 2
 timing hookflash-in 0
!
voice-port 3
 timing hookflash-in 0
!
voice-port 4
 timing hookflash-in 0
!
end

```

Cisco 6400 NRP – Example 1

```

Current configuration:
!
version 12.0
no service pad
service timestamps debug datetime msec
service timestamps log datetime msec

```

```

!
hostname NRP

!
redundancy
  main-cpu
  no auto-sync standard
  no secondary console enable
ip subnet-zero
!
interface Loopback1
  ip address 172.16.0.2 255.255.0.0
  no ip directed-broadcast
!
interface ATM0/0/0
  no ip address
  no ip directed-broadcast
  no ip mroute-cache
  no ATM ilmi-keepalive
!
interface ATM0/0/0.4 point-to-point

!--- The interface ATM0/0/0.4 point-to-point uses ip
!--- unnumbered Loopback1 for the IP address requirements.

  ip unnumbered Loopback1
  no ip directed-broadcast
  no ip route-cache
  ATM route-bridged ip
  PVC 4/100
    encapsulation aal5snap
  !
interface Ethernet0/0/1
  no ip address
  no ip directed-broadcast
!
interface Ethernet0/0/0
  no ip directed-broadcast
!
interface FastEthernet0/0/0
  no ip address
  no ip directed-broadcast
  full-duplex
!
ip classless
ip route 172.16.0.1 255.255.255.255 ATM0/0/0.4
end

```

Cisco 6400 NRP – Example 2

Current configuration:

```

!
version 12.0
no service pad
service timestamps debug datetime msec
service timestamps log datetime msec
!
hostname NRP

!
redundancy
  main-CPU
  no auto-sync standard

```

```
no secondary console enable
ip subnet-zero
!
interface ATM0/0/0
no ip address
no ip directed-broadcast
no ip mroute-cache
no ATM ilmi-keepalive
!
interface ATM0/0/0.4 point-to-point
ip address 172.16.0.2 255.255.0.0
no ip directed-broadcast
no ip route-cache
ATM route-bridged ip
PVC 4/100
encapsulation aal5snap
!
interface Ethernet0/0/1
no ip address
no ip directed-broadcast
!
interface Ethernet0/0/0
no ip directed-broadcast
!
interface FastEthernet0/0/0
no ip address
no ip directed-broadcast
full-duplex
!
ip classless
ip route 172.16.0.1 255.255.255.255 ATM0/0/0.4
end
```

Verify

There is currently no verification procedure available for this configuration.

Troubleshoot

There is currently no specific troubleshooting information available for this configuration.

Related Information

- [Cisco 6400 Software Setup Guide](#)
 - [DSL Technical Support](#)
 - [Technical Support – Cisco Systems](#)
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