

# Cisco DSL Router Configuration and Troubleshooting Guide – IRB with a Static IP Address

Document ID: 71103

## Contents

### Introduction

#### Prerequisites

Requirements

Components Used

Conventions

#### Tasks to Perform

#### Configure

Configuration

#### Verify

#### Troubleshoot

#### Related Information

## Introduction

Your Internet Service Provider (ISP) has assigned a static public IP address to your Cisco DSL Router.

**Tip:** If you are not familiar with how to configure Cisco devices and would like to follow a step-by-step configuration, refer to Step-by-Step Configuration of IRB with a Static IP Address.

## Prerequisites

### Requirements

There are no specific requirements for this document.

### Components Used

This document is not restricted to specific software and hardware versions.

### Conventions

Refer to Cisco Technical Tips Conventions for more information on document conventions.

## Tasks to Perform

**Note:** This example highlights two types of configurations:

- Dynamic Host Configuration Protocol (DHCP) Server
- Network Address Translation (NAT).

The tasks to perform are:

- Design an IP addressing scheme for your private LAN.
- Configure an IP address and subnet mask on the Cisco DSL Router Ethernet interface.
- Configure the ATM interface (Asymmetric Digital Subscriber Line (ADSL) interface) of the Cisco DSL Router with an ATM permanent virtual circuit (PVC) and encapsulation.
- Enable integrated routing and bridging (IRB).
- Create and configure the Bridge Group Virtual Interface (BVI) of the Cisco DSL Router for IRB with a static IP address.
- **For NAT:** Configure NAT on the Cisco DSL Router in order to allow sharing of the static public IP address of the BVI interface.
  - ◆ *Optional:* NAT Pool, if additional IP addresses have been provided by your ISP.
  - ◆ *Optional:* Static NAT, if Internet users require access to internal servers.
- Configure each host PC with an IP address, subnet mask, default gateway, and Domain Name System (DNS) server(s).

**For DHCP Server:** Alternatively, if you want the Cisco DSL Router to assign the dynamic IP addresses of your PC client, configure each PC to obtain an IP address and DNS server(s) automatically via DHCP.

## Configure

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

**Note:** Use the Command Lookup Tool (registered customers only) to find more information on the commands used in this document.

## Configuration

**Tip:** If you are not familiar with how to configure Cisco devices and would like to follow a step-by-step configuration, refer to Step-by-Step Configuration of IRB with a Static IP Address.

### Cisco DSL Router with a Static IP Address

```
!--- Comments contain explanations and additional information.
```

```
service timestamps debug datetime msec
```

```
service timestamps log datetime msec
```

```
!
```

```
bridge irb
```

```
!
```

```
ip subnet-zero
```

```
!
```

```
!--- For DHCP Server:
```

```
ip dhcp excluded-address <ip address of ethernet0>
```

```
ip dhcp pool <dhcp pool name>
```

```
network <ip network address of ethernet0> <subnet mask>
```

```
default-router <ip address of ethernet0>
```

```
dns-server <ip address of dns server>
```

```
!
```

```
interface ethernet0
```

```
no shut
```

```
ip address <ip address> <subnet mask>
```

```

/--- For NAT:

ip nat inside
no ip directed-broadcast
!
interface atm0
no shut
no ip address
no ip directed-broadcast
no atm ilmi-keepalive
pvc <vpi/vci>
encapsulation aal5snap

/--- Common PVC values supported by ISPs are 0/35 or 8/35.
/--- Confirm your PVC values with your ISP.

!
bridge-group 1
!
interface bvi1
ip address <ip address> <subnet mask>

/--- For NAT:

ip nat outside
no ip directed-broadcast
!

/--- For NAT:

ip nat inside source list 1 interface bvi1 overload

/--- If you have a pool (a range) of public IP addresses provided
/--- by your ISP, you can use a NAT Pool. Replace
/--- ip nat inside source list 1 interface bvi1 overload
/--- with these two configuration statements:
/--- ip nat inside source list 1 pool <nat pool name> overload
/--- ip nat pool <nat pool name> <first ip address> <last ip address>
/--- netmask <subnet mask>

/--- If Internet users require access to an internal server, you can
/--- add this static NAT configuration statement:
/--- ip nat inside source static tcp <inside ip address of server> {80 or 25}
/--- <outside well-known ip address of server> {80 or 25} extendable
/--- Note: TCP port 80 (HTTP/web) and TCP port 25 (SMTP/mail) are used
/--- for this example. You can open other TCP or UDP ports, if needed.

!
ip classless
ip route 0.0.0.0 0.0.0.0 <default gateway to isp>

/--- For NAT:

access-list 1 permit <ip network address of ethernet0> <wildcard mask>

/--- In this configuration, access-list 1 defines a standard access list
/--- that permits the addresses that NAT translates. For example, if
/--- your private IP network is 10.10.10.0, the configuration of
/--- access-list 1 permit 10.10.10.0 0.0.0.255 allows NAT to translate

```

```
!--- packets with source addresses between 10.10.10.0 and 10.10.10.255.
!
bridge 1 protocol ieee
  bridge 1 route ip
!
end
```

## Verify

There is currently no verification procedure available for this configuration.

## Troubleshoot

Refer to Troubleshooting RFC1483 Bridging with IRB if your ADSL service does not work properly.

Return to the previous page of this configuration and troubleshooting guide – RFC1483 Bridging with IRB Implementation Options.

Return to the main page of the Cisco DSL Router Configuration and Troubleshooting Guide.

## Related Information

### • Technical Support & Documentation – Cisco Systems

---

[Contacts & Feedback](#) | [Help](#) | [Site Map](#)

© 2014 – 2015 Cisco Systems, Inc. All rights reserved. [Terms & Conditions](#) | [Privacy Statement](#) | [Cookie Policy](#) | [Trademarks of Cisco Systems, Inc.](#)

---

Updated: Sep 11, 2006

Document ID: 71103

---