Cisco DSL Router Configuration and Troubleshooting Guide − Cisco DSL Router − PPPoA with a Dynamic IP Address

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Introduction
Prerequisites
Requirements
Components Used
Conventions
Tasks to Perform
Configure
Configuration
Verify
Troubleshoot
Related Information

Introduction

Your Internet Service Provider (ISP) has assigned a dynamic public IP address to your Cisco Digital Subscriber Line (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 PPPoA with a Dynamic 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

- 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 (Asymetric Digital Subscriber Line (ADSL) interface) of the Cisco DSL Router with an ATM permanent virtual circuit (PVC) and encapsulation.
- Create and configure the Dialer interface of the Cisco DSL Router for Point−to−Point Protocol over ATM (PPPoA) with a negotiated IP address.

- **For NAT:** Configure NAT on the Cisco DSL Router to allow sharing of the dynamic public IP address of the Dialer 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: Alternatively, if you want the Cisco DSL Router to assign dynamic IP addresses to your PC clients, 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 PPPoA with a Dynamic IP Address.

Cisco DSL Router with a Dynamic IP Address

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


service timestamps debug datetime msec
service timestamps log datetime msec
ip subnet-zero
!

!--- For DHCP:

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>
 ip nat inside
 no ip directed-broadcast
!
interface atm0
 no shut
 no ip address
 no ip directed-broadcast
 no ip mroute-cache
 pvc <vpi/vci>
  encapsulation aal5mux ppp dialer
  dialer pool-member 1

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

```
!
interface dialer1
 ip address negotiated
 no ip directed-broadcast

!--- For NAT:

 ip nat outside
 encapsulation ppp
 dialer pool 1
 ppp chap hostname <username>
 ppp chap password <password>
 ppp pap sent-username <username> password <password>
!

!--- For NAT:

ip nat inside source list 1 interface dialer1 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 dialer1 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 dialer1

!--- 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, configure
!--- access-list 1 permit 10.10.10.0 0.0.0.255 in order to allow NAT to translate
!--- packets with source addresses between 10.10.10.0 and 10.10.10.255.

!
end
```

Verify

There is currently no verification procedure available for this configuration.

Troubleshoot

Refer to Troubleshooting PPPoA if your ADSL service does not work properly.

Related Information

- **Cisco DSL Router Configuration and Troubleshooting Guide − PPPoA Implementation Options**
- **Cisco DSL Router Configuration and Troubleshooting Guide**
- **Technical Support & Documentation − Cisco Systems**

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