

PPPoA Session Termination: xDSL to 6400 UAC

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Introduction

Prerequisites

Requirements

Components Used

Conventions

Configure

Network Diagram

Configurations

Verify

Troubleshoot

Troubleshoot Commands

NetPro Discussion Forums – Featured Conversations

Related Information

Introduction

This sample configuration enables a PC connected to a Cisco 675 asymmetric digital subscriber line (ADSL) router to connect through a Cisco 6100 advanced digital subscriber line access multiplexer (ADSLAM) to a 6400 Universal Access Concentrator (UAC) with the help of Point-to-Point Protocol over ATM (PPPoA). This configuration allows you to route data to the Internet or other services. The specific equipment used in this configuration is not required. As an example, the Cisco 675 can be replaced with a Cisco 677 or a Cisco 678.

This sample configuration has a few features enabled on the Cisco 675 ADSL router that are common to an ADSL rollout. These features are Network Address Translation (NAT), Port Address Translation (PAT), and Dynamic Host Configuration Protocol (DHCP). These features allow for a cookie cutter rollout. Since all the boxes have the same configuration, the cost of rollout and documentation is significantly reduced.

You can copy and paste the code for the Cisco IOS®-based Node Route Processor (NRP) and Node Switch Processor (NSP) to your configurations. However, the 675 router uses the Cisco Broadband Operating System (CBOS) and you cannot copy and paste this code. The commands to configure the Cisco 675 router are also included in this sample configuration.

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 IOS Software Release 12.0.7-DC for NRP and NSP
- CBOS Release 2.3.0.053 for Cisco 675 ADSL Router

- Viewrunner 2.4.1
- Sytem software 2.4.10 for Cisco 6100 ADSLAM
- PC or workstation
- Cisco 675 ADSL customer premises equipment (CPE)
- ADSL service from your local Telco
- Cisco 6100 ADSLAM with SCM, NI-1, CAP ATU-C
- Cisco 6400 UAC with 1 x NRP and 1 x NSP

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.

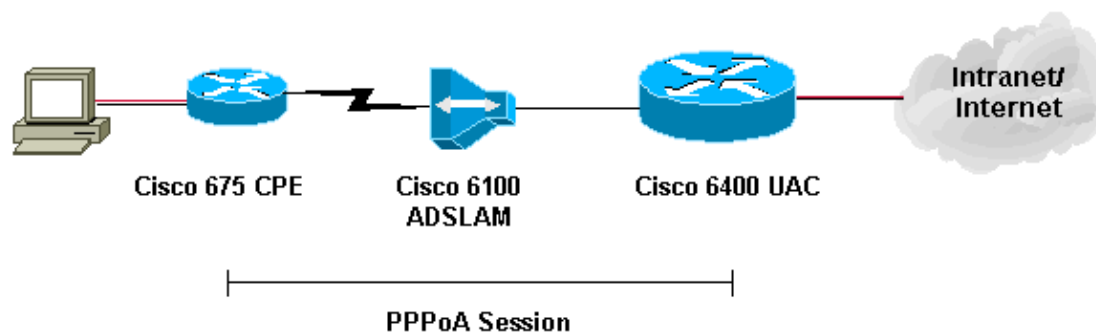
Configure

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 this network setup:



Configurations

Configuration Notes

You must configure a permanent virtual connection (PVC) on the Cisco 6100 ADSLAM. This allows the test subscriber to connect. You must record the virtual path identifier/virtual channel identifier (VPI/VCI) configuration for use on the Cisco 6400 UAC when you configure the permanent virtual path (PVP) on the NSP and terminate the PPP session on the NRP.

This sample configuration shows a virtual path on the NSP. This path allows the Cisco 6400 UAC to pass through the cells from the ADSLAM to the terminating router, or to another ATM switch.

This document uses these configurations:

- PC Configuration
- Cisco 675 CPE
- Commands to Issue to the Cisco 675 CPE
- 6400 NSP
- 6400 NRP

PC Configuration

1. Set IP addressing to obtain an IP address automatically.
2. Set WINS to use DHCP for WINS resolution.
3. Ensure that no default gateway is set.

It is probably necessary to set a domain name because DHCP cannot pass this information.

Cisco 675 CPE

```
[[ PPP Device Driver = Section Start ]]
PPP Port User Name = 00, <
username
>
PPP Port User Password = 00, <
password
>
PPP Port Option = 00, IPCP,IP Address,3,Auto,Negotiation Not Required,Negotiable
,IP,0.0.0.0
[[ IP Routing = Section Start ]]
IP NAT = enabled
[[ DHCP = Section Start ]]
DHCP Server = enabled
[[ CBOS = Section Start ]]
NSOS Remote Restart = enabled
NSOS Serial More = 20
```

Commands to Issue to the Cisco 675 CPE

```
cbos>enable
Password:

cbos#set nat enable
NAT is now enabled
You must use "write" then reboot for changes to take effect.

cbos#set ppp wan0-0 login <username>
User name for wan0-0 has been set to testcpe.

cbos#set ppp wan0-0 password <password>
Password for wan0-0 has been set to cisco.

cbos#set ppp wan0-0 ipcp 0.0.0.0
PPP wan0-0 IPCP Address set to 0.0.0.0

cbos#set int eth0 address 172.22.10.254
eth0 ip address changed from 10.0.0.1 to 172.22.10.254

cbos#set int eth0 netmask 255.255.255.0
```

```
eth0 netmask changed from 255.255.255.0 to 255.255.255.0
```

```
cbos#set dhcp server enable  
DHCP Server enabled
```

```
cbos#set dhcp server pool 0 ip 172.22.10.0  
Pool 0 IP parameter is now 172.22.10.0
```

```
cbos#set dhcp server pool 0 netmask 255.255.255.0  
Pool 0 netmask parameter is now 255.255.255.0
```

```
cbos#set dhcp server pool 0 gateway 172.22.10.254  
Pool 0 gateway parameter is now 172.22.10.254
```

```
cbos#set password exec <password a>  
Exec Password Change Successful!
```

```
cbos#set password enable <password b>  
Enable Password Change Successful!
```

```
cbos#write  
NVRAM written.
```

6400 NSP

```
interface ATM 8/0/1  
no ip address  
no ip directed-broadcast  
no atm ilmi-keepalive  
atm pvp 1 interface ATM 1/0/0 1
```

6400 NRP

```
aaa new-model  
aaa authentication ppp default local  
!  
!  
username <  
username  
> password <  
password  
>  
!  
!  
interface ATM 0/0/0.200 multipoint  
no ip directed-broadcast  
pvc 1/35  
encapsulation aal5cisco ppp Virtual-Template 2  
!  
!  
interface FastEthernet 0/0/0  
ip address 172.22.32.1 255.255.255.0  
no ip directed-broadcast  
!  
!  
interface Virtual-Template 2  
ip unnumbered FastEthernet 0/0/0  
no ip directed-broadcast  
peer default ip address pool <  
pool name  
>  
ppp authentication pap  
!
```

```
!  
ip local pool <  
pool name  
> 172.22.40.10 172.22.40.25
```

Verify

This section provides information you can use in order to confirm that your configuration works properly.

Certain **show** commands are supported by the Output Interpreter Tool (registered customers only) , which allows you to view an analysis of **show** command output.

Use these commands on the Cisco 675 CPE:

- **show interface wan0** Shows the trained up speed for the ADSL link.
- **show interface wan0-0** Shows the PPP session information.
- **show dhcp server pool 0** Shows the DHCP information at the client site.

Use this command on the Cisco 6400 UAC:

- **show atm pvc** Shows whether the correct PVC is established.

Troubleshoot

This section provides information you can use to troubleshoot your configuration.

Troubleshoot Commands

Certain **show** commands are supported by the Output Interpreter Tool (registered customers only) , which allows you to view an analysis of **show** command output.

Note: Before you issue **debug** commands, refer to Important Information on Debug Commands.

Use these commands on the Cisco 6400 UAC:

- **debug ppp negotiation** Shows the PPP negotiation debug messages.
- **debug ppp authentication** Shows if a client passes authentication.
- **debug ppp error** Displays protocol errors and error statistics associated with PPP connection negotiation and operation.

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