

# Configuring a Cisco 675 CPE With PPPoA, DHCP, NAT, and Terminating on a 6400 UAC (aal5mux ppp)

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## Introduction

This document describes two sample configurations. Configuration 1 shows a Cisco 675 Router configured with Network Address Translation (NAT) and as a Dynamic Host Configuration Protocol (DHCP) server for its local Ethernet clients. The DSL interface WAN0-0 is configured with an IP address and connects to a Cisco 6400 Universal Access Concentrator (UAC) configured with `aal5mux ppp`.

Configuration 2 shows a Cisco 675 Router configured with NAT and as a DHCP server for its local Ethernet clients. The DSL interface WAN0-0 is configured in order to accept an IP address from a pool of addresses configured on the Cisco 6400.

## 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 675 CPE Cisco Broadband Operating System (CBOS) Release 2.2.0.000
- Cisco 6400 UAC-NRP IOS® Software Release 12.0(7)DC

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

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

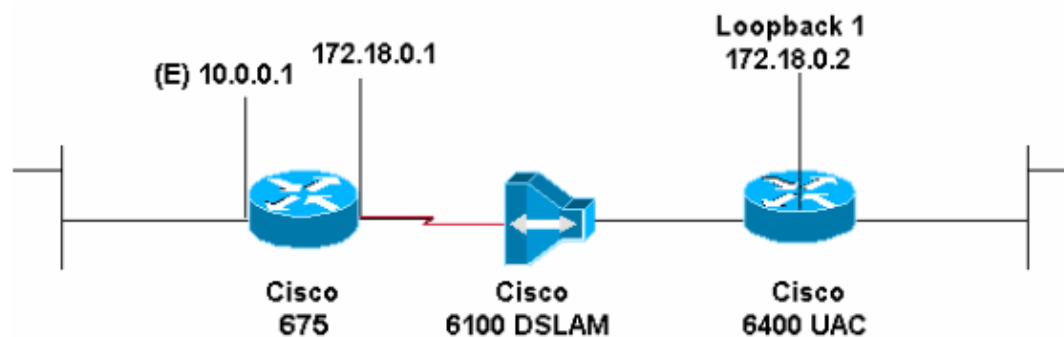
## Configure

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) in order to obtain more information on the commands used in this section.

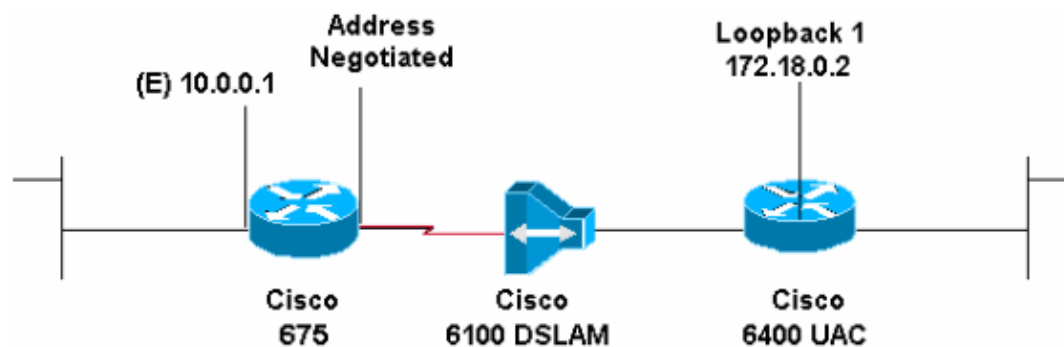
### Network Diagram – Configuration 1

This document uses this network setup:



### Network Diagram – Configuration 2

This document uses this network setup:



## Configurations 1

The Cisco 675 is configured as a DHCP server for its local Ethernet clients (address range from 10.0.0.2 to 10.0.0.4).

The Ethernet0 interface is assigned an IP address of 10.0.0.1 (the default). The Wan0-0 interface is configured with an IP address of 172.18.0.1.

You must enable NAT on the Cisco 675 in order to support this configuration. Otherwise, the WAN0-0 IP address of 172.18.0.1 overwrites the Ethernet IP address of 10.0.0.1.

```
R1#set dhcp server enabled
DHCP Server enabled

R1#set dhcp server pool 0 ip 10.0.0.2

!--- This is the first ip address to be assigned to Clients.

Pool 0 IP parameter is now 10.0.0.2

R1#set dhcp server pool 0 size 3

!--- This starts from 10.0.0.2 and ends at 10.0.0.4.

Pool 0 size parameter is now 3

R1#set dhcp server pool 0 netmask 255.0.0.0
Pool 0 netmask parameter is now 255.0.0.0

R1#set dhcp server pool 0 gateway 10.0.0.1

!--- This address is given to clients as the default gateway.

Pool 0 gateway parameter is now 10.0.0.1

R1#set int eth0 address 10.0.0.1

!--- Set IP address for Ethernet.

eth0 ip address changed from 9.9.9.9 to 10.0.0.1

R1#set int eth0 mask 255.0.0.0
eth0 netmask changed from 255.255.0.0 to 255.0.0.0

R1#set ppp wan0-0 ipcp 172.18.0.1

!--- Set IP address for WAN DSL interface.

PPP wan0-0 IPCP Address set to 172.18.0.1

R1#set ppp wan0-0 authen enabled

!--- This enables authentication <pap chap negotiated>.

PAP and CHAP Authentication is now enabled on specified port

R1#set ppp wan0-0 login <username>

!--- This is used for authentication
.
User name for wan0-0 has been set to
<username>

R1#set ppp wan0-0 password <password>

!--- This is used for authentication.

Password for wan0-0 has been set to
<password>

R1#set nat enable
```

*!--- This enables NAT.*

NAT is now enabled

*!--- You must use "write" then reboot in order for the changes to take effect.*

### Cisco 6400 NRP

```
hostname NRP
!
username
<username>
  password
<password>
!
ssg disable
!
interface Loopback1
ip address 172.18.0.2 255.255.0.0
!
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
no ip directed-broadcast
no ip mroute-cache
pvc 3/33
!
class-int
<class name>
!
interface Ethernet0/0/1
no ip address
no ip directed-broadcast
!
!
interface Virtual-Templat1
ip unnumbered Loopback1
ip directed-broadcast
no peer default ip address
ppp authentication chap
!
ip route 10.0.0.1 255.255.255.255 172.18.0.1
no ip http server
!
!
vc-class atm
<class name>
encapsulation aal5mux ppp Virtual-Templat1
!
line con 0
transport input none
end
```

## Configurations 2

The WAN0-0 interface might be configured in order to negotiate an IP address from its host located across the WAN0-0 interface. In this case the host is a Cisco 6400 NRP configured with a local ip address pool.

The Cisco 6400 assigns an address from this local ip address pool to the WAN0-0 interface of the Cisco 675. The Cisco 675 continues to function as a DHCP server for its local Ethernet clients.

Use the Cisco 675 configuration in Configuration 1 and make the change shown in this example.

```
Cisco 675
R1#set ppp wan0-0 ipcp 0.0.0.0

!--- IP address is assigned to WAN0-0 interface
!--- by remote host located across WAN-DSL link.

PPP wan0-0 IPCP Address set to 0.0.0.0

R1#write
NVRAM written.

R1#reboot
```

```
Cisco 6400 NRP

version 12.0
!
hostname NRP
!
username
<username>
password
<password>

ip address-pool local
ssg disable
!
interface Loopback1
ip address 172.18.0.2 255.255.0.0
!
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
no ip directed-broadcast
no ip mroute-cache
pvc 3/33
!
class-int
<class name>

!
interface Ethernet0/0/1
no ip address
no ip directed-broadcast
!
interface Ethernet0/0/0
no ip address
ip directed-broadcast
```

```

no ip mroute-cache
!
interface FastEthernet0/0/0
no ip address
no ip directed-broadcast
shutdown
!
interface Virtual-Template1
ip unnumbered Loopback1
ip directed-broadcast
no ip route-cache
peer default ip address pool
<pool name>

ppp authentication chap
!
ip local pool
<pool name>
172.18.0.10 172.18.0.20
ip classless
no ip http server
!
!
vc-class atm
<class name>

encapsulation aal5mux ppp Virtual-Template1
!
line con 0
transport input none
line aux 0
!
end

```

## Verify

There is currently no verification procedure available for this configuration.

## Troubleshoot

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

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NetPro Discussion Forums – Featured Conversations for DSL
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Network Infrastructure: Remote Access
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Service Providers: VPN Service Architectures
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## Related Information

- Cisco 600 Series Installation and Operation Guide
- Cisco 6400 Universal Access Concentrator

- **Cisco DSL Technology Support Information**
  - **Cisco DSL Product Support Information**
  - **Technical Support & Documentation – Cisco Systems**
- 

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