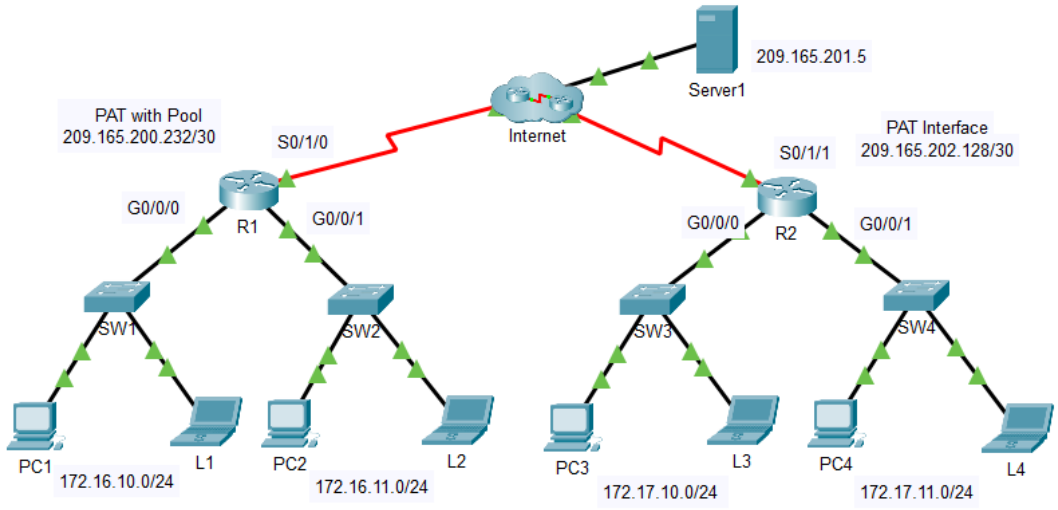
LAB 9.2PAT CONFIGURATION

Port Address Translation (PAT), also known as NAT Overload, is a form of dynamic network address translation that allows multiple devices on a private network to share a single public IP address. It works by assigning a unique port number to each device's traffic, enabling the router to track and correctly route responses back to the original internal device. This is a highly efficient way to conserve public IP addresses.

Network Topology



Part 1: Configure Dynamic NAT with Overload on R1

This section outlines the configuration commands for Router R1 to implement Dynamic NAT with Overload.

- **Step 1: Configure an Access Control List (ACL)**

  Permit traffic from the internal `172.16.0.0/16` network.

  ```
  access-list 1 permit 172.16.0.0 0.0.255.255
  ```

- **Step 2: Define a NAT Pool**

  Create a pool of public IP addresses to be used for translation.

```
ip nat pool VIANET_IP 209.165.200.233 209.165.200.234
netmask 255.255.255.252
```

- **Step 3: Associate the ACL with the NAT Pool**
  Combine the ACL and the NAT pool, and enable `overload` to allow multiple internal addresses to share a single public address.
  ```
  ip nat inside source list 1 pool VIANET_IP overload
  ```

- **Step 4: Designate NAT Interfaces**
  Configure the appropriate interfaces as NAT `inside` and `outside`.
  ```
  interface GigabitEthernet0/0/0
  ip nat inside interface
  GigabitEthernet0/0/1
  ip nat inside
  interface Serial0/1/0
  ip nat outside
  ```

Part 2: Configure PAT using an Interface on R2

This section outlines the configuration commands for Router R2 to implement PAT using its outside interface address.

- **Step 1: Configure an Access Control List (ACL)**
  Permit traffic from the internal `172.17.0.0/16` network.
  ```
  access-list 2 permit 172.17.0.0 0.0.255.255
  ```

- **Step 2: Associate the ACL with the Outside Interface**
  Directly associate ACL 2 with the outside interface `Serial0/1/1` and enable `overload`.
  ```
  ip nat inside source list 2 interface Serial0/1/1 overload
  ```

- **Step 3: Designate NAT Interfaces**
  Configure the appropriate interfaces as NAT `inside` and `outside`.
  ```
  interface GigabitEthernet0/0/0
   ip nat inside interface
  GigabitEthernet0/0/1
  ip nat inside
  interface Serial0/1/1
  ```

```
ip nat outside
```

Step 3: View NAT Translations

Check the active NAT translations on R2.

- **Command**: `show ip nat translations`
- **Explanation**: This command shows which private IPs are currently being translated to which public IPs from your pool.
- **Command**: `show ip nat statistics`
- **Explanation**: This command shows the ip translation statistics.