

CN

## Lab Assignment 6

Title: Static and Dynamic NAT configuration

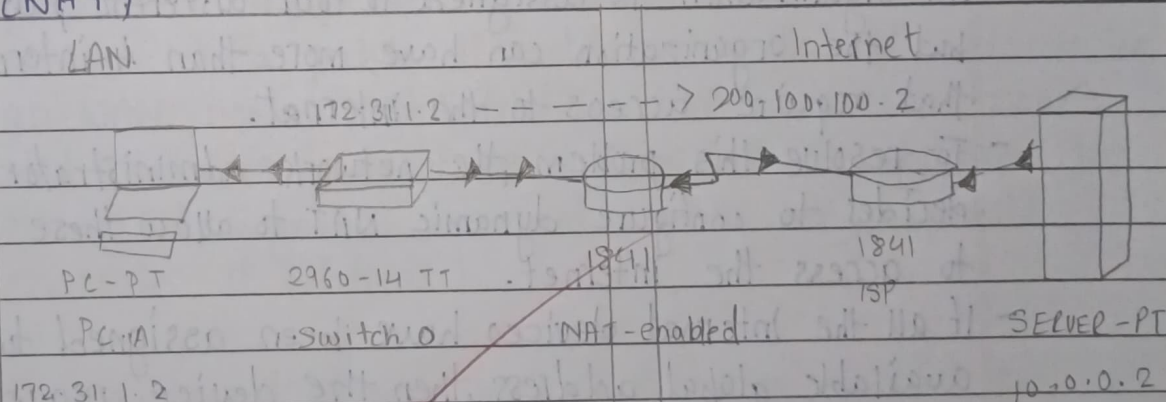
Aim: Implement static and Dynamic NAT configuration with Packet Tracer.

Objective: 1. To understand and learn the concept of NAT by static and dynamic methods.

Theory:

1) Definition of NAT with diagram.

- A set of network addresses assigned to an organization internal network so that devices can communicate locally.
- If there is a need for such devices to connect to the internet, their private addresses must be translated to public addresses using network Address Translation (NAT).



ii) Method - Static and Dynamic:

a) Static NAT:

- Static NAT creates a one-to-one mapping between private and public addresses.
- Static NAT is usually configured by a Network admini-

-strator, and this configuration remains constant.

→ Static NAT can be configured by using the following two steps:

1. Creating a mapping between the private internal address and public global address using the `ip nat inside source static [private-address] [public address] global` configuration command
2. After the mapping is made, the interfaces taking part in the NAT translation are configured as either inside or outside with respect to NAT.

## 2. Dynamic NAT

- Dynamic NAT makes a pool of public addresses and assigns them to private addresses on a first-come-first-serve (FCFS) basis to determine which private addresses ought to be translated.
- An organization is assigned to four different public addresses but the organization can have more than 4 internal devices that require access to the internet.
- To resolve this problem, the network administrator decides to configure dynamic NAT to allow these devices to access the internet.
- If all the internal devices have been assigned to all the available global address, then the device requesting for a public address will have to wait ~~until~~ until one is made available.

## iii) Advantage of NAT.

- |                           |                           |
|---------------------------|---------------------------|
| a) Lowers the cost        | d) consistency in network |
| b) Conserving Address     | e) Network security.      |
| c) Connection flexibility | f) Private addressing.    |



Students observation:

Thus, we implemented static and dynamic NAT configuration with Packet Tracer.

FAQ's

- ans 1) A set of Network addresses assigned to an organizations internal network so that devices can communicate locally.
- ans 2) Static NAT: It maps network traffic from a static external IP address to an internal IP address or network. It creates a static translation of real addresses to mapped addresses. Static NAT provides internet connectivity to networking devices through a private LAN with an unregistered private IP address.
- Dynamic NAT: It is a many-to-one mapping of a private IP addresses or subnets inside the SD-WAN network to a public IP address or subnet outside the SD-WAN network. The traffic from different zones and subnets over trusted (inside) IP addresses in the LAN segment is sent over a single public (outside IP address).
- ans 3) The command shows ip nat translations will show us the translation table containing all the active NAT entries.
- ans 4) NAT translates the inside local address into inside global addresses, similarly, PAT translates private unregistered IP addresses into public registered IP addresses. However, unlike NAT, PAT also uses source

port numbers, allowing multiple hosts to share a single IP address while using different port numbers.

AT us  
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