NAT
(Network Address Translation)

Introduction

Network Address Translations the process where a network device, usually a firewall, assigns a public address to a computer (or group of computers) inside a private network. The main use of NAT is to limit the number of public IP addresses an organization or company must use, for both economy and security purposes.

Types of NAT:

- Static NAT
- Dynamic NAT
- NAT/PAT or PAT Overload

Static NAT

- This type of NAT is designed to allow one-to-one mapping between local and global addresses. Keep in mind that the static version requires you to have one real Internet IP address for every host on your network.
- Administrator has to map each private address to public address manually.

Dynamic NAT

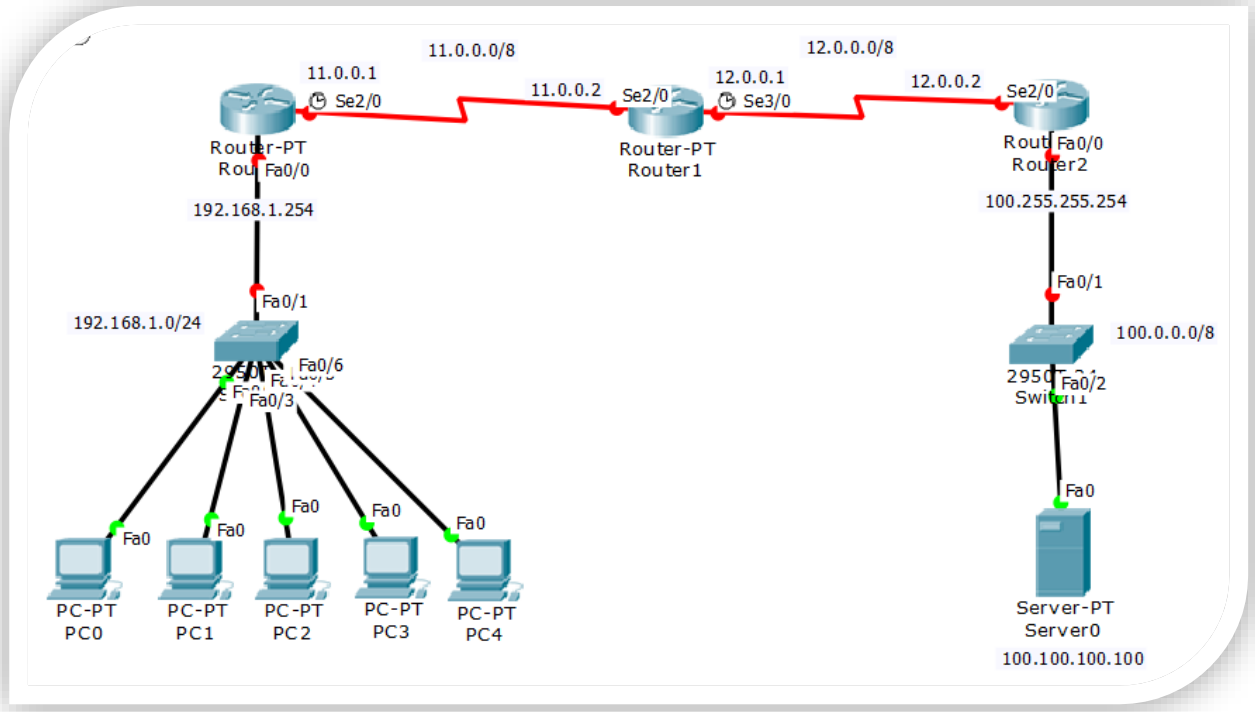
- This version gives you the ability to map an unregistered IP address to a registered IP address from out of a pool of registered IP addresses. You

don’t have to statically configure your router to map an inside to an outside address as you would using static NAT, but you do have to have enough real, bona-fide IP addresses for everyone who’s going to be sending packets to and receiving them from the Internet.

- In such type of NAT, Administrator has to create a pool for the public addresses.

PAT Overload

- This is the most popular type of NAT configuration. Understand that overloading really is a form of dynamic NAT that maps multiple unregistered IP addresses to a single registered IP address—many-to-one—by using different ports. by using PAT (NAT Overload), you get to have thousands of users connect to the Internet using only one real global IP address.
- This reduces the cost of purchasing many Public IP Addresses.



NAT Configuration

Static NAT

Syntax

Router(config)# ip nat inside source static <private_ip> <public_ip>

Router(config)# ip nat inside source static 192.168.1.2 12.0.0.3
Router(config)# ip nat inside source static 192.168.1.3 12.0.0.4
Router(config)# interface s1/0
Router(config-if)# ip nat outside
Router(config-if)# interface f0/0
Router(config-if)# ip nat inside
Router(config-if)# end

Router# show ip nat translations

Removing Static NAT

Router(config)# no ip nat inside source static 192.168.1.2 12.0.0.3
Router(config)# no ip nat inside source static 192.168.1.3 12.0.0.4

Dynamic NAT

Syntax

Router(config)# ip nat pool <pool_name> <private_ip> <public_ip>

Router(config)# ip nat pool abc 11.0.0.11 11.0.0.15 netmask 255.0.0.0
Router(config)# access-list 10 192.168.1.0 0.0.0.255
Router(config)# ip nat inside source list 10 pool abc
Router(config)# interface s1/0
Router(config-if)# ip nat outside
Router(config-if)# interface f0/0
Router(config-if)# ip nat inside

*Router# clear ip nat translation **

Removing Dynamic NAT

Router(config)# no ip nat inside source list 10
Router(config)# no access-list 10
Router(config)# no ip nat pool abc

PAT

Syntax
Router(config)# ip nat pool <pool_name> <private_ip> <public_ip>

Router(config)# ip nat pool abc 11.0.0.11 11.0.0.11 netmask 255.0.0.0
Router(config)# access-list 10 192.168.1.0 0.0.0.255
Router(config)# ip nat inside source list 10 pool abc overload
Router(config)# interface s1/0
Router(config-if)# ip nat outside
Router(config-if)# interface f0/0
Router(config-if)# ip nat inside

Removing PAT

Router(config)# ip nat inside source list 10
Router(config)# no access-list 10
Router(config)# no ip nat pool abc