Cisco™ CCNA : NAT

Static NAT

Maps an unregistered IP address to registered IP (globally unique) addresses on one-to-one basis.

The command, **ip nat inside source static <local ip> <global ip>** configures address translation for static NAT.

Dynamic NAT

Maps an unregistered IP address to a registered (globally unique) IP address from a group of registered (globally unique) IP addresses.
The command, **ip nat inside source list <access-list-number> pool <name>** is used to map the access-list to the IP NAT pool during the configuration of Dynamic NAT.

Overloading

A special case of dynamic NAT that maps multiple unregistered IP addresses to a single registered (globally unique) IP address by using different port numbers.

Dynamic NAT with overloading is also known also as PAT (Port Address Translation).

Overlapping

This occurs when your internal IP addresses belong to global IP address range that belong to another network.

Defining an IP NAT Pool

1. Defining an IP NAT pool for the inside network using the command:
ip nat pool <pool-name> <start-ip> <end-ip> {netmask <net-mask> | prefix-length <prefix-length>} [type-rotary] ***Ex: ip nat pool pool1 200.200.200.3 200.200.200.4 netmask 255.255.255.0***

Note that type-rotary is optional command. It indicates that the IP address range in the address pool identifies hosts among which TCP load is distributed.

2. Mapping the access-list to the IP NAT pool by using the command:
ip nat inside source list <access-list-number> pool <pool-name> ***Ex: ip nat inside source list 1 pool pool1***

Address Classification

Inside Local : An actual address assigned to an inside host

Inside Global : An inside address seen from the outside

Outside Global : An actual address assigned to an outside host

Outside Local : An outside address seen from the inside

NAT Pool : A pool of IP addresses to be used as inside global or outside local addresses in translations

Configuring NAT

When configuring NAT, NAT should be enabled on at least one inside and one outside interface.

1. The command for enabling NAT on inside interface is:
R1(config-if)#ip nat inside

2. The command for enabling NAT on the outside interface is:

R1(config-if)#ip nat outside

Remember to enter into appropriate configuration modes before entering the commands.

Usually, the inside NAT will be configured on an Ethernet interface, whereas the outside NAT is configured on a serial interface.

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