**Dynamic NAT Configuration and Verification**

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**Dynamic NAT Overview**

Dynamic NAT automatically maps inside local addresses to inside global addresses using a pool of public IPv4 addresses. Unlike static NAT, which permanently maps an inside local address to an inside global address, dynamic NAT uses a first-come, first-served basis from a predefined pool of addresses.

**Dynamic NAT Scenario**

In this scenario, two local area networks (LANs) with addresses 192.168.10.0/24 and 192.168.11.0/24 connect to Router R1. Router R2 is configured with dynamic NAT, utilizing a pool of public IPv4 addresses ranging from 209.165.200.226 to 209.165.200.240. Traffic between the inside network (local) and the outside network (Internet) is translated dynamically through R2.

**Configure Dynamic NAT**

To configure dynamic NAT, follow these steps:

**Step 1: Define NAT Pool**

Use the ip nat pool command to define a pool of public IPv4 addresses. This pool will be used for translation.

**Command Example:**

R2(config)# ip nat pool NAT-POOL1 209.165.200.226 209.165.200.240 netmask 255.255.255.224

This command defines a pool named NAT-POOL1 with the address range from 209.165.200.226 to 209.165.200.240.

**Analyze Dynamic NAT**

Dynamic NAT translation occurs when traffic flows from the inside network to the outside network, and vice versa.

**Inside to Outside Translation**

1. **Source Address Translation**:
   * Host 192.168.10.10 (PC1) sends a packet to the server at 209.165.200.254.
   * R2 checks its NAT configuration and translates the source address 192.168.10.10 to 209.165.200.226.
   * The same process occurs for 192.168.11.10 (PC2), which is translated to 209.165.200.227.

**Outside to Inside Translation**

1. **Destination Address Translation**:
   * The server responds to PC1 using the address 209.165.200.226.
   * R2 translates this address back to the inside local address 192.168.10.10 and forwards the packet to PC1.
   * The same process occurs for PC2, translating 209.165.200.227 back to 192.168.11.10.

**Verify Dynamic NAT**

Verification ensures that the NAT configuration works as expected.

**Show NAT Translations**

Use the show ip nat translations command to display current NAT translations.

**Command Example:**

R2# show ip nat translations

This command lists all active translations, showing inside global and inside local addresses.

**Clear NAT Translations**

To clear dynamic NAT entries, use the clear ip nat translation command.

**Command Examples:**

R2# clear ip nat translation \*

* Clears all dynamic NAT entries.

**Show NAT Statistics**

The show ip nat statistics command provides a summary of NAT activity, including the number of active translations and available pool addresses.

**Command Example:**

R2# show ip nat statistics

This command shows detailed statistics, such as the number of active and expired translations.

**Important Commands Summary**

* **Define NAT Pool**: ip nat pool NAT-POOL1 209.165.200.226 209.165.200.240 netmask 255.255.255.224
* **Show Translations**: show ip nat translations
* **Clear Translations**: clear ip nat translation \*
* **Show Statistics**: show ip nat statistics