Configuring Dynamic and Static NAT

CIT 167

Chaz Davis

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Part 1: Build the Network and Verify Connectivity

i) Cable the network as shown in the topology
a
ii) Configure PC Hosts
a
iii) Initialize and reload the routers and switches
a
iv) Configure basic settings for each router
a
v) Create a simulated web server on ISP
a
vi) Configure Static routing
a
vii) Save the running Config to the startup config
a
viii) Verify the network connectivity
a

Part 2: Configure and Verify Static NAT

i) Configure static Mapping
a
ii) Specify the Interfaces
a
iii) Test the Configuration
a

a.
What is the translation of the Inside local host?
192.168.1.20= 209.165.200.225

The Inside global address is assigned by? By the ISP and the NAT pool

The inside local address is assigned by? by the Administrator

b. What port number was used in this ICMP exchange? we can see that port 5 was used the first time, followed by port 6, then port 7, and finally port 8.

c. What was the protocol used in this translation? TCP

What are the port numbers used? Ports 1025 and 1026 were used from the inside Because I ran once with the SSH/TELNET client, and then I ran in from the commandline as well using the telnet command. And port 23 was used to reach the telnet on the loopback interface.

Inside global/local:
Inside global is 209.165.200.225:1025 and Inside local is 192.168.1.20:1025

Outside global/local:
Outside Global is 192.31.7.1:23 and outside local is also 192.31.7.1:23
d.
e.
f.

Part 3: Configure and Verify Dynamic NAT

i) Clear NATs
a **ii) Define an ACL that matches the LAN private IP address range**
a **iii) Verify that the NAT interface configurations are still valid**
a **iv) Define the pool of usable public IP addresses**
a **v) Define the NAT from the inside source list to the outside pool**
a **vi) Test the configuration**
a **a.**
What is the translation of the Inside local host address for PC-B? 192.168.1.21= 209.165.200.242

A dynamic NAT entry was added to the table with ICMP as the protocol when PC-B sent an ICMP message to 192.31.7.1 on ISP

What port number was used in this ICMP exchange? ports 5,6,7, and 8

b.
From PC-B, open a browser and enter the IP address of the ISP-simulated web server (Lo0 interface). When prompted, log in as webuser with a password of webpass.

c.
What protocol was used in this translation? TCP

What port numbers were used?
Inside: ports 1025 – 1028

Outside: port 80

What well-known port number and service was used? port 80, which is HTTP port.

d.
vii) Remove the static NAT entry
a

Reflection

i) Why would NAT be used in a network?
Thee won't be enough ipv4 addresses, so, NAT provides a way to ensure that we have the available resources and addresses to match. Secondly, NAT ensures a higher level of security, we can hide resources that we don't want to be reachable by the outside network.

ii) What are the limitations of NAT?
NAT needs ip information or port information in the ip header or TCP header for translations. Also, End-to-End addressing is lost. So, certain peer-to-peer applications may not work. Switching delays may occur. It complicates tunneling protocols. Impropoer use of a network layer device, router, tampering with port numbers.