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WEEK-END ASSIGNMENT-14

Computer Networking Workshop (CSE 4541)

Publish on: 23-05-2024

Course Outcome: CO₆

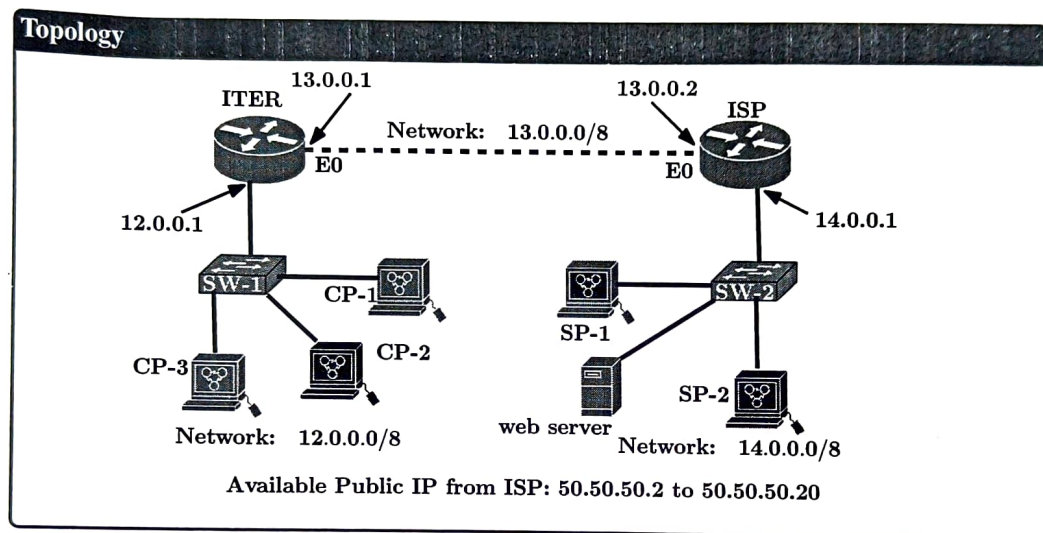
Program Outcome: PO₄₋₅

Submission on: 27-05-2024

Learning Level: L₅

Experiment with network address translation to slow the depletion of available IP address space by allowing multiple private IP addresses to be represented by a much smaller number of public IP addresses.

Consider the following diagram for configuring the routers. You will configure NAT on router ITER to translate the private IP address of 12.0.0.0 network to a public address of 50.0.0.0 network to get access to Internet.



1. Write the IOS commands to configure the above network, assign IP to router interface, and routings.

IOS commands step by steps to configure the network.

```
ITER (config) # interface fa 0/0
ITER (config-if) # ip address 12.0.0.1 255.0.0.0
ITER (config-if) # no shutdown
ITER (config) # ip nat pool NAT-POOL 50.0.0.1 50.0.0.255
                  netmask 255.0.0.0
.    "           ip nat inside source list 1 pool NAT-POOL
    "           access-list 1 permit 12.0.0.0 0.0.0.255
```

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```
"           interface fa 0/0
```

```
ITER (config-if) # ip nat inside
```

```
ITER (config) # ip route 0.0.0.0 0.0.0.0 50.0.0.1
```

2. Configure Static NAT

Write the Static NAT configuration commands on ITER router and select the interface for inside and outside

Remark

1. Static NAT configuration commands:

```
ITER (config) # ip nat inside source static 12.0.0.1 50.0.0.1  
ITER (config) # interface fa 0/0  
ITER (config-if) # ip address 12.0.0.1 255.0.0.0  
ITER (config-if) # ip nat inside
```

2. Implement static nat inside for the interface:

```
interface fa 0/0  
ip address 12.0.0.1 255.0.0.0  
ip nat inside source static 12.0.0.1 50.0.0.1
```

3. Implement static nat outside for the interface:

```
interface serial 0/0/0  
ip address 50.0.0.254 255.0.0.0  
ip nat outside source static 12.0.0.2 50.0.0.2
```

4. verify static nat translation:

```
show ip nat translations
```

3. Configure Dynamic NAT

| Dynamic NAT IOS commands | Remark |
|--|------------------|
| <p>1. Create a pool of addresses called CnwNet on the ITER router. The pool should contain a range of addresses of 50.50.50.2 through 50.50.50.20.</p> <pre> ip nat pool CnwNet 50.50.50.2 50.50.50.20 prefix-length 28 access-list 1 permit 12.0.0.0 0.0.0.255 ip nat inside source list 1 pool CnwNet </pre> | |
| <p>2. Create access list 1. This list permits traffic from the 12.0.0.0 network to be translated.</p> <pre> Router(config)# access-list 1 permit 12.0.0.0 0.0.0.255 </pre> | |
| <p>3. Map the access list to the pool that was created.</p> <pre> ip nat inside source list 1 pool CnwNet </pre> | |
| <p>4. Configure interface(s) as an inside NAT interface and outside NAT interface.</p> <pre> interface fa 0/0 ip address 50.50.50.3 255.0.0.0 ip nat inside interface se 0/0/0 ip address 50.50.50.4 255.0.0.4 </pre> | |
| <p>5. Generate network traffics(i.e. ICMP or TCP etc.) and show the translations</p> <pre> Router# ping 50.50.50.2 source 50.50.50.20 Router# telnet 50.50.50.2 80 source 50.50.50.20 </pre> | → ip nat outside |

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