NAT [NETWORK ADDRESS TRANSLATION]

- Technique of translating Private IP addresses into Public IP Addresses & vice versa.

- **WHY NAT**
  - A short term Solution to the Problem of the depletion or Exhaustion of IP addresses.

LONG TERM

IPV6

SHORT TERM

CIDR

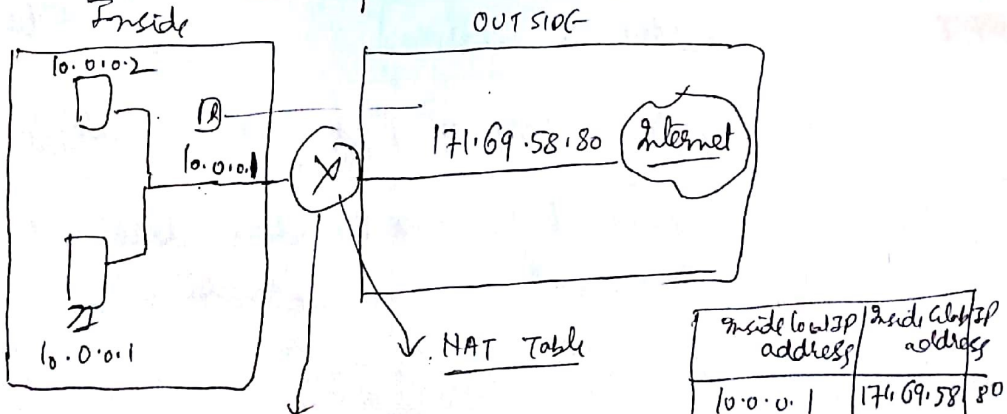
NAT

- NAT is a way to conserve IP addresses.
  - Hide a no, of hosts behind a single IP address

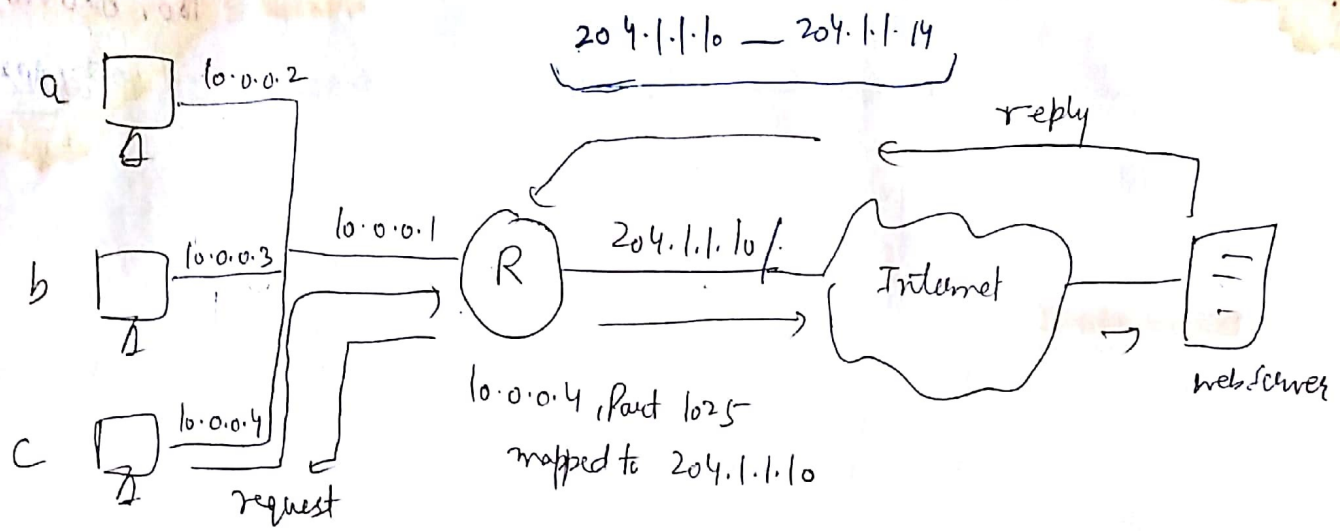
USE

10.0.0.0 to 10.255.255.255
172.16.0.0 to 172.32.255.255
192.168.0.0 to 192.168.255.255
} For local n/w

We can give Internet access to Multiple hosts using Private IPs by connecting it with Single Public IP.



OUTGOING WEB CLIENT THROUG NAT



TYPES OF NAT

(1) **STATIC NAT** — One to One Mapping

If 3 hosts want to access the internet, we have to get 3 IPs from ISP.

(2) **Dynamic NAT** - A Pool of IP address is made.

All the Private host can access the internet depending upon the Size of the IP Pool.

Example: 122.x.1.1 to 122.x.1.4 — 4 IP address Pool

Only 4 host can access Internet

(3) **NAT/PAT** [Port address Translation] — Dynamic NAT overloading

- Single IP address with Port no is used.
- ADSL Rauters used by Service Providers have NAT/PAT feat

DYNAMIC NAT

Router (config) # no ip nat inside source static 10.0.0.3 100.0.0.103

10.0.0.2 100.0.0.102

no

ctrl 2

Router # Router # wr ↵ enter

Building config

LIST 1 → POOL (TEST)

10.0.0.0/8 100.0.0.107 - 100.0.0.103

Router (config) # access-list 1 Permit 10.0.0.0 0.255.255.255 (inside local)

(config) # ip nat ?

To create ACL

inside

outside

Pool

(config) # ip nat Pool test ?

ip nat Pool test 100.0.0.101 100.0.0.103 ? (outside local)

Create Pool

netmask - specify n/w mask

(config) # ip nat Pool test 100.0.0.101 100.0.0.103 netmask 255.0.0.0

Connect

(config) # ip nat inside source ?

ip nat inside source list 1 Pool test ↵ (*)

inside local outside global

Config # int fa 0/0

(Config-if) # ip nat in

int fa 1/0

(Config-if) # ip nat out

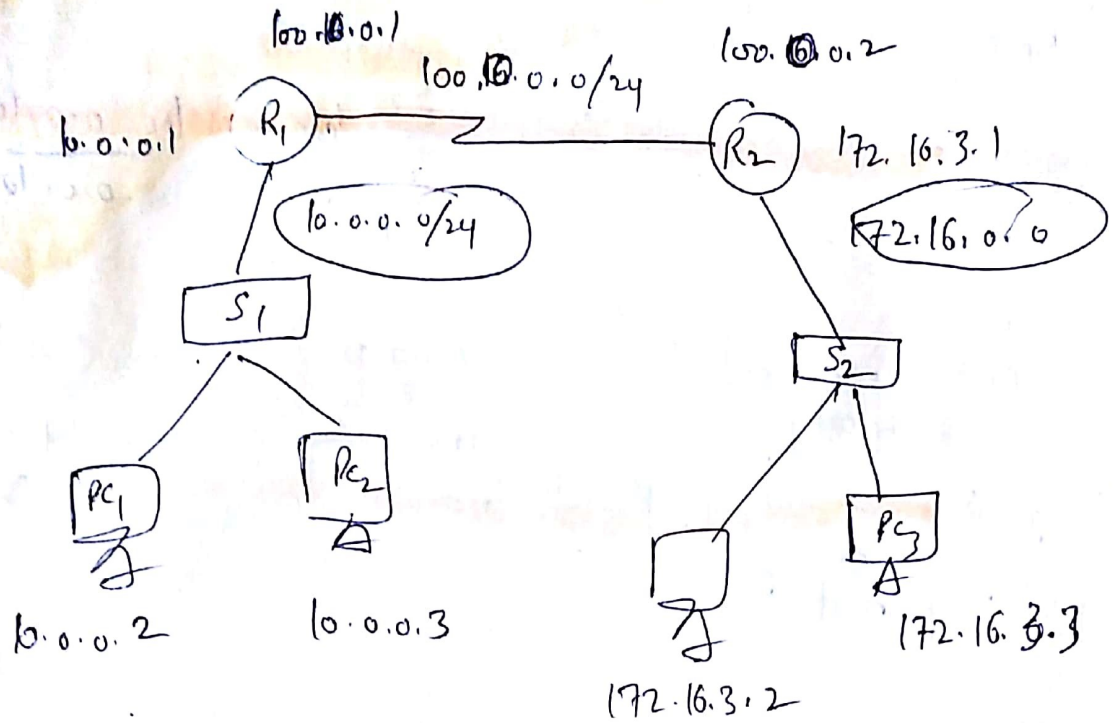
ctl ^2

Router # show ip nat translations

Ping PC1 to PC3

Router # show ip nat translation (clear ip nat translation)

also used to clear the



① Static NAT

10.0.0.2 — 100.0.0.62
10.0.0.3 — 100.0.0.63

Router # show ip nat translations

Router (config) # ip nat inside source ?

LIST
STATIC

Router (config) # ip nat inside source static 10.0.0.2 100.10.0.62
(config) # ip nat inside source static 10.0.0.3 100.10.0.63

(config) # int f 1/0

(config-if) # ip nat ?

inside
outside

Router (config-if) # ip nat inside

Config-if # int S2/0
ip nat outside

ctr ^2

Router # show ip nat Translations

Ping from PC1 to PC3

Router # show ip nat translations

PAT

Router # show run. — Copy ip nat Pool test

Router (config-t) # Paste

Router (config) # ~~do show ip nat~~

Router (config) # no ip nat inside source list 1 Pool test

no ip nat Pool test 100.0.0.101 100.0.0.103
net mask

Router (config) # ip nat Pool test 100.0.0.100
100.0.0.100 netmask
255.0.0.0

ip nat inside source list 1 Pool test overload

Router # show ip nat tra