NAT for IPv4

📕 CCNA3v7 Module 6 NAT for IPv4

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NAT Characteristics

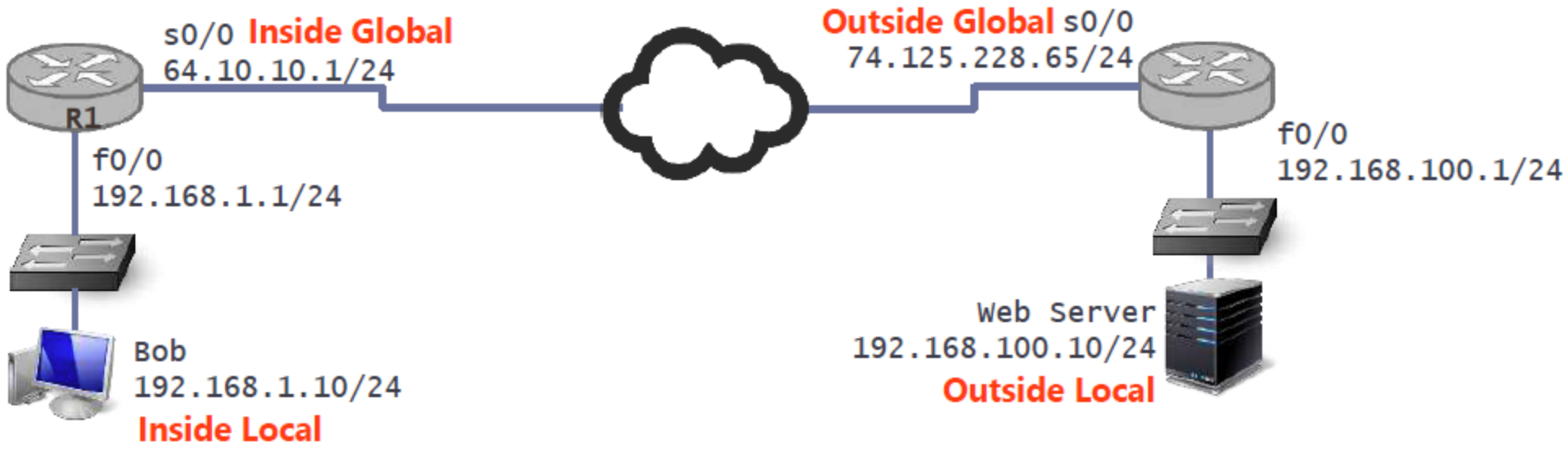
- NAT (Network Address Translation) translates one IP address to another IP address.
- **Advantages**
  - Conserve public IP addresses
  - Eliminates address overlap events
  - Makes it easier to connect to the internet
  - Eliminates address renumbering if your network changes
- **Disadvantages**
  - Translation introduces switching path delays
  - Cause loss of end-to-end IP traceability
  - Certain applications will not function with NAT enabled

Types of NAT

- **Static NAT**: uses a **one-to-one** mapping of local and global addresses configured by the network administrator that **remain constant**.
- **Dynamic NAT:** translates **many-to-many**. Uses a pool of public addresses and assigns them on a first-come, first-served basis.
- **PAT (Port Address Translation / NAT Overload):** translates **many-to-one**. Maps multiple private IPv4 addresses to a single public IPv4 address or a few addresses. Each private address is also tracked by a port number.

Display active NAT translations: `show ip nat translation`

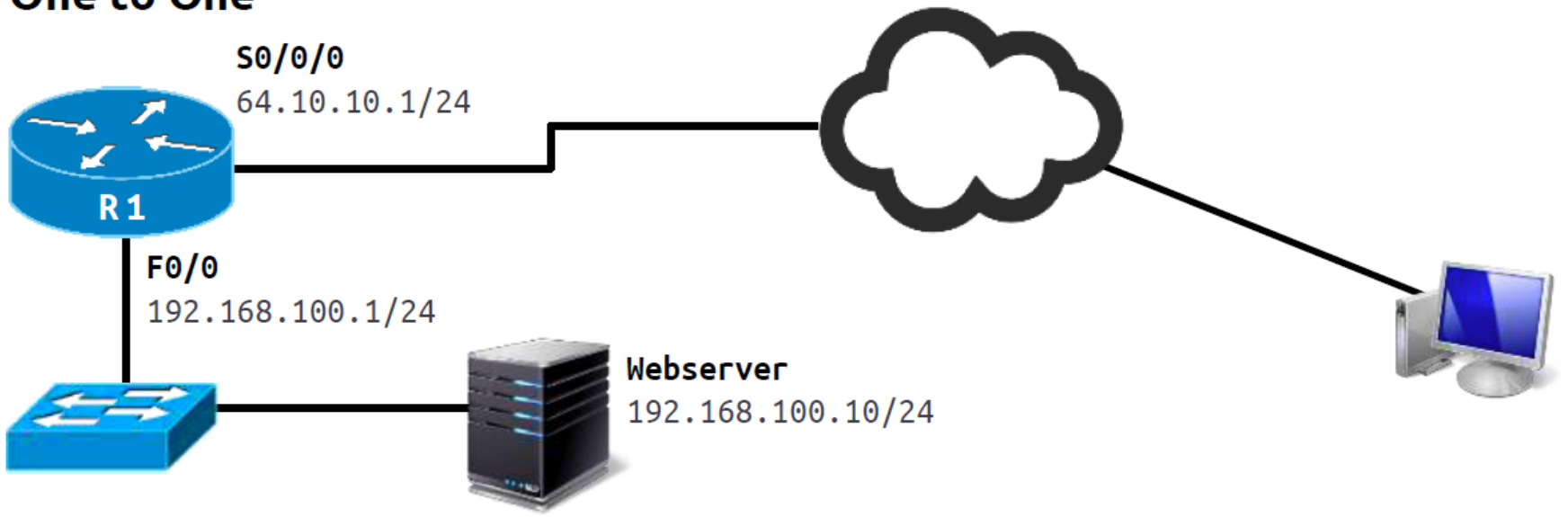
Types of NAT addresses



Inside Local → Inside Global ⇝ Outside Global → Outside Local

Static NAT

Translates One to One

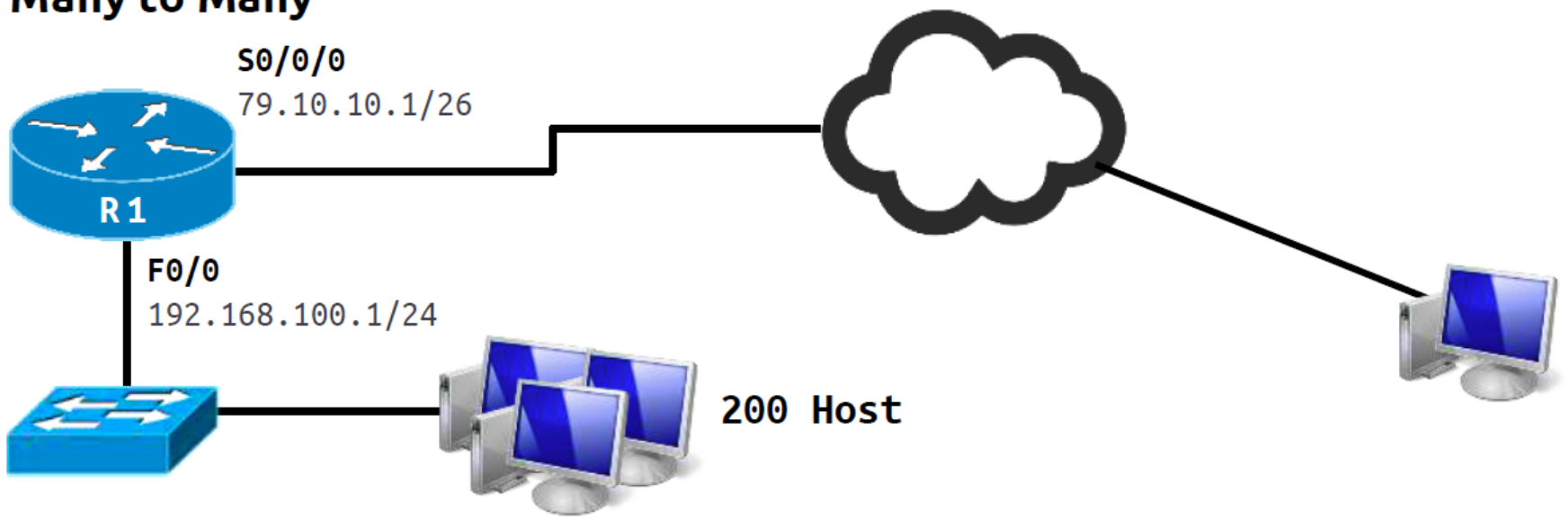


R1 CLI

```
R1(config)# ip nat inside source static 192.168.100.10 64.10.10.10
R1(config)# int f0/0
R1(config-if)# ip nat inside
R1(config)# int s0/0
R1(config-if)# ip nat outside
```

Dynamic NAT

Translates Many to Many

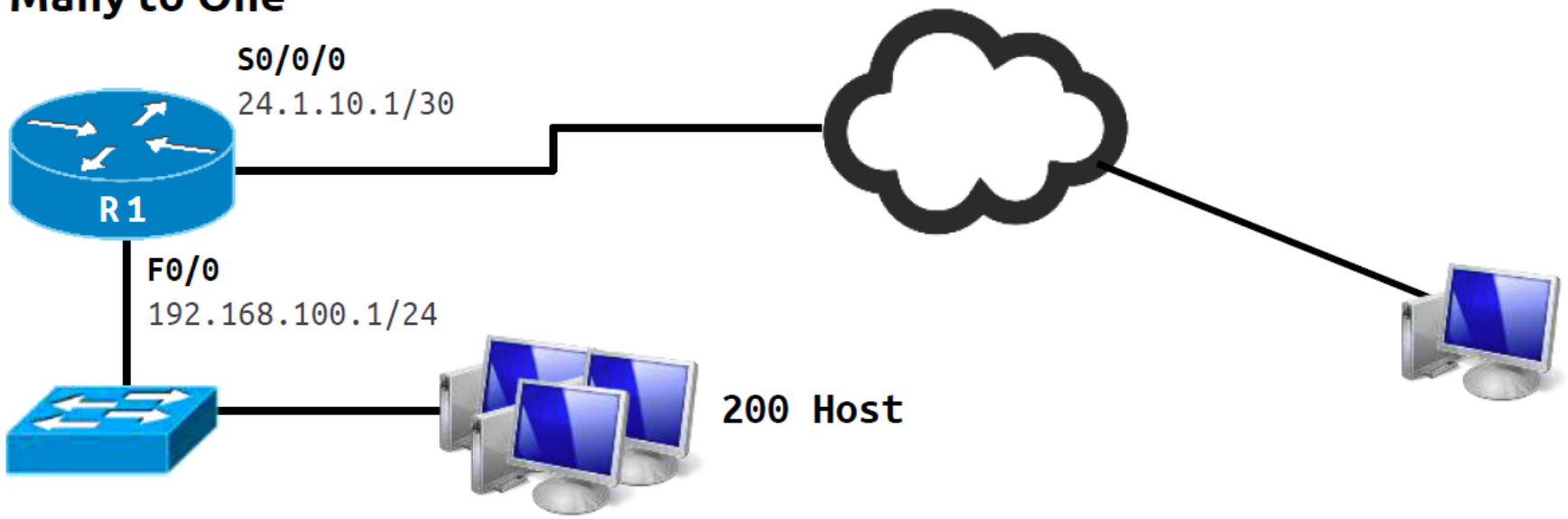


R1 CLI

```
R1(config)# ip nat pool TIA 79.10.10.33 79.10.10.63 netmask 255.255.255.224
R1(config)# access-list 1 permit 192.168.100.0 0.0.0.255
R1(config)# ip nat inside source list 1 pool TIA
R1(config)# int f0/0
R1(config-if)# ip nat inside
R1(config)# int s0/0
R1(config-if)# ip nat outside
```

PAT (Port Address Translation / NAT Overload)

Translates Many to One



R1 CLI

```
R1(config)# ip nat pool MEGAPATH 24.1.10.1 24.1.10.1 netmask 255.255.255.255
R1(config)# access-list 2 permit 192.168.100.0 0.0.0.255
R1(config)# ip nat inside source list 2 pool MEGAPATH overload
R1(config)# int f0/0
R1(config-if)# ip nat inside
R1(config)# int s0/0
R1(config-if)# ip nat outside
```