

## What is Static Routing?

**Static Routing** is a type of routing where **routes are manually configured** by the network administrator.

- Routers do **not exchange routing information** automatically.
- The admin defines the exact path (route) to reach a specific network.

## Key Features of Static Routing:

- **Manual setup**
- **No overhead** from route advertisements
- **More secure**
- **Not scalable** for large networks

## When to Use Static Routing:

- Small networks
- Backup routes
- When the path never changes
- For simple or test labs

## Static Routing Command (Cisco IOS):

```
Router(config)# ip route [destination_network] [subnet_mask] [next_hop_ip or exit_interface]
```

## Example Scenario:

Let's say you have two routers:

PC1 --- R1 --- R2 --- PC2

### IP Addressing:

- **R1 to R2:** 192.168.1.1 ↔ 192.168.1.2 (subnet: 192.168.1.0/30)
- **PC1 Network:** 10.0.0.0/24 (connected to R1)
- **PC2 Network:** 20.0.0.0/24 (connected to R2)

## Static Route Commands:

On Router R1 (to reach PC2's network via R2):

```
R1(config)# ip route 20.0.0.0 255.255.255.0 192.168.1.2
```

On Router R2 (to reach PC1's network via R1):

```
R2(config)# ip route 10.0.0.0 255.255.255.0 192.168.1.1
```

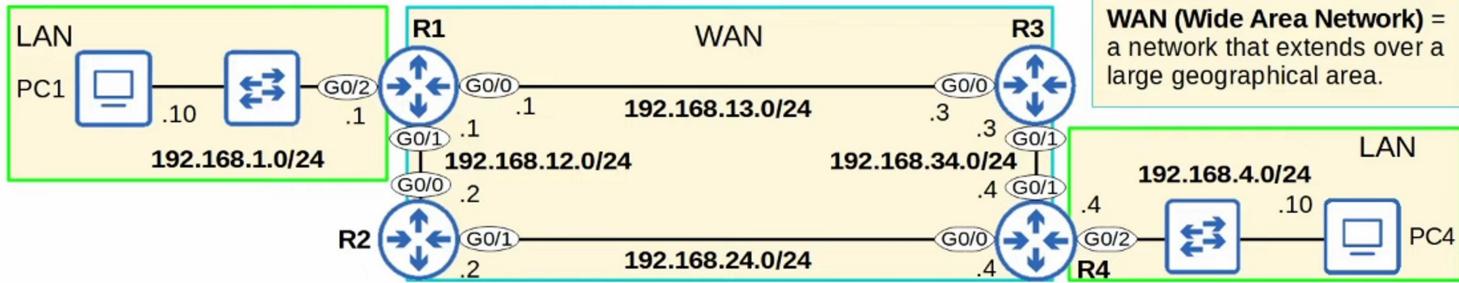
## Benefits:

- Predictable and stable

- No CPU usage for calculations

### ⚠ Limitations:

- Manual changes if topology changes
- Not suitable for large or dynamic networks



## R1 Pre-configurations (IP Addresses)

```
R1# conf t
R1(config)# interface g0/0
R1(config-if)# ip address 192.168.13.1 255.255.255.0
R1(config-if)# no shutdown

R1(config-if)# interface g0/1
R1(config-if)# ip address 192.168.12.1 255.255.255.0
R1(config-if)# no shutdown

R1(config-if)# interface g0/2
R1(config-if)# ip address 192.168.1.1 255.255.255.0
R1(config-if)# no shutdown

R1# show ip int br
Interface          IP-Address      OK? Method Status      Protocol
GigabitEthernet0/0  192.168.13.1   YES manual up        up
GigabitEthernet0/1  192.168.12.1   YES manual up        up
GigabitEthernet0/2  192.168.1.1    YES manual up        up
GigabitEthernet0/3  unassigned     YES NVRAM administratively down down
```

There is no need to use **exit** to return to global config mode before entering **interface g0/1**. You can use the **interface g0/1** command directly from interface config mode.

