Static Routing Network Report

1. Introduction

This project demonstrates a multi-router network connected through serial WAN links and multiple LANs behind each router. All routing is performed using static routes, enabling full end-to-end communication between all subnets.

The topology includes four routers (R-01, R-02, R-03, R-04), each connected to its own LANs through switches and PCs. The routers are connected in a chain using serial links, and every router manually knows all remote networks using static routing.

2. Network Devices

Routers:

R-01 – LANs 192.168.1.0/24 & 192.168.2.0/24

R-02 – LANs 192.168.4.0/24 & 192.168.5.0/24

R-03 – LANs 192.168.7.0/24 & 192.168.8.0/24

R-04 – LANs 192.168.9.0/24 & 192.168.10.0/24

Switches and PCs assigned per LAN.

3. IP Addressing Summary

R-01: 192.168.1.0/24, 192.168.2.0/24

R-02: 192.168.4.0/24, 192.168.5.0/24

R-03: 192.168.7.0/24, 192.168.8.0/24

R-04: 192.168.9.0/24, 192.168.10.0/24

Serial Links:

R-01 ↔ R-02 : 192.168.3.0/24

R-02 ↔ R-03 : 192.168.6.0/24

R-03 ↔ R-04 : 192.168.8.0/24

4. Basic Router Configurations

R-01

interface g0/0

ip address 192.168.1.1 255.255.255.0

interface g0/1

ip address 192.168.2.1 255.255.255.0

interface s0/1/0

ip address 192.168.3.1 255.255.255.0

clock rate 64000

R-02

interface g0/0

ip address 192.168.4.1 255.255.255.0

interface g0/1

ip address 192.168.5.1 255.255.255.0

interface s0/1/0

ip address 192.168.3.2 255.255.255.0

interface s0/1/1

ip address 192.168.6.1 255.255.255.0

clock rate 64000

R-03

interface g0/0

ip address 192.168.7.1 255.255.255.0

interface g0/1

ip address 192.168.8.1 255.255.255.0

interface s0/1/1

ip address 192.168.6.2 255.255.255.0

interface s0/1/0

ip address 192.168.8.2 255.255.255.0

R-04

interface g0/0

ip address 192.168.9.1 255.255.255.0

interface g0/1

ip address 192.168.10.1 255.255.255.0

interface s0/1/0

ip address 192.168.8.3 255.255.255.0

5. Static Routing Configuration

R-01 Static Routes

ip route 192.168.4.0 255.255.255.0 192.168.3.2

ip route 192.168.5.0 255.255.255.0 192.168.3.2

ip route 192.168.7.0 255.255.255.0 192.168.3.2

ip route 192.168.8.0 255.255.255.0 192.168.3.2

ip route 192.168.9.0 255.255.255.0 192.168.3.2

ip route 192.168.10.0 255.255.255.0 192.168.3.2

R-02 Static Routes

ip route 192.168.1.0 255.255.255.0 192.168.3.1

ip route 192.168.2.0 255.255.255.0 192.168.3.1

ip route 192.168.7.0 255.255.255.0 192.168.6.2

ip route 192.168.8.0 255.255.255.0 192.168.6.2

ip route 192.168.9.0 255.255.255.0 192.168.6.2

ip route 192.168.10.0 255.255.255.0 192.168.6.2

R-03 Static Routes

ip route 192.168.1.0 255.255.255.0 192.168.6.1

ip route 192.168.2.0 255.255.255.0 192.168.6.1

ip route 192.168.4.0 255.255.255.0 192.168.6.1

ip route 192.168.5.0 255.255.255.0 192.168.6.1

ip route 192.168.9.0 255.255.255.0 192.168.8.3

ip route 192.168.10.0 255.255.255.0 192.168.8.3

R-04 Static Routes

ip route 192.168.1.0 255.255.255.0 192.168.8.2

ip route 192.168.2.0 255.255.255.0 192.168.8.2

ip route 192.168.4.0 255.255.255.0 192.168.8.2

ip route 192.168.5.0 255.255.255.0 192.168.8.2

ip route 192.168.7.0 255.255.255.0 192.168.8.2

ip route 192.168.8.0 255.255.255.0 192.168.8.2

6. Testing & Verification

Use ping and traceroute to test connectivity. All PCs should communicate end-to-end.

7. Conclusion

This network demonstrates a fully functional static routing environment where each router manually defines routes to all remote networks. Suitable for small to medium fixed-topology networks.