

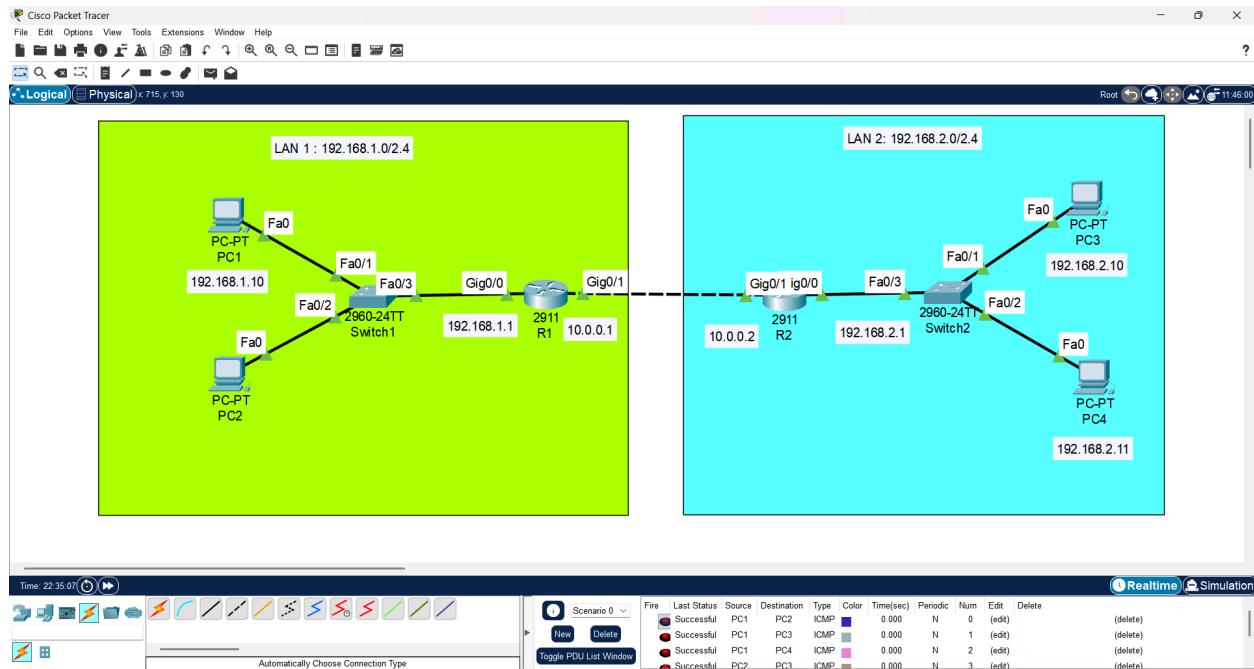
Lab 04 – Static Routing

Objective:

To connect two separate LANs using two routers to form static connection via a WAN link and verify inter-network communication.

Topology:

Two LANs connected via a two routers over a crossover cable



IP Addressing:

LAN 1:

PC1: 192.168.1.10 /24

PC2: 192.168.1.11 /24

Gateway: 192.168.1.1

LAN 2:

PC3: 192.168.2.10 /24

PC4: 192.168.2.11 /24

Gateway: 192.168.2.1

Router 1 Configuration:

- G0/0: 192.168.1.1
- G0/1: 10.0.0.1

Router 1 IP Route

-ip route 192.168.2.0 255.255.255.0 10.0.0.2

The screenshot shows a window titled 'R1' with tabs for 'Physical', 'Config', 'CLI' (which is selected), and 'Attributes'. The main area is labeled 'IOS Command Line Interface'. The terminal session displays the configuration of Router 1. It starts with system information, followed by a configuration dialog prompt, and then the step-by-step configuration of two interfaces (GigabitEthernet 0/0 and 0/1) with their respective IP addresses and subnet masks.

```
Cisco CISCO2911/K9 (revision 1.0) with 491520K/32768K bytes of memory.  
Processor board ID FTX152400KS  
3 Gigabit Ethernet interfaces  
DRAM configuration is 64 bits wide with parity disabled.  
255K bytes of non-volatile configuration memory.  
249856K bytes of ATA System CompactFlash 0 (Read/Write)  
  
--- System Configuration Dialog ---  
Would you like to enter the initial configuration dialog? [yes/no]: no  
Press RETURN to get started!  
  
Router>enable  
Router#config t  
Enter configuration commands, one per line. End with CNTL/Z.  
Router(config)#hostname R1  
R1(config)#interface gig  
R1(config)#interface gigabitEthernet 0/0  
R1(config-if)#ip address 192.168.1.1 255.255.255.0  
R1(config-if)#no shutdown  
  
R1(config-if)#  
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up  
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up  
R1(config-if)#exit  
R1(config)#interface gig  
R1(config)#interface gigabitEthernet 0/1  
R1(config-if)#ip address 10.0.0.1 255.255.255.0  
R1(config-if)#no shutdown  
  
R1(config-if)#  
%LINK-5-CHANGED: Interface GigabitEthernet0/1, changed state to up  
R1(config-if)#exit |
```

Top

Router 2 Configuration:

- G0/0: 192.168.2.1
- G0/1: 10.0.0.2

Router 2 IP Route

-ip route 192.168.1.0 255.255.255.0 10.0.0.1

Purpose of IP Routing

-To specify the path data will travel in a static routing

```
R2
Physical Config CLI Attributes
Processor board in slot 0 contains
3 Gigabit Ethernet interfaces
DRAM configuration is 64 bits wide with parity disabled.
255K bytes of non-volatile configuration memory.
249856K bytes of ATA System CompactFlash 0 (Read/Write)

--- System Configuration Dialog ---

Would you like to enter the initial configuration dialog? [yes/no]: no

Press RETURN to get started!

Router>enable
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R2
R2(config)#interface GigabitEthernet 0/0
R2(config)#ip address 192.168.2.1 255.255.255.0
R2(config-if)#no shutdown

R2(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up
*LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up
R2(config-if)#exit
R2(config)#interface gig
R2(config)#interface gigabitEthernet 0/1
R2(config-if)#ip address 10.0.0.2 255.255.255.0
R2(config-if)#no shutdown

R2(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/1, changed state to up
*LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to up
R2(config-if)#exit
```

Verification:

- Successful ping between LAN 1 and LAN 2

PC2 to PCs in LAN 2

```
Cisco Packet Tracer PC Command Line 1.0
C:>ping 192.168.2.10

Pinging 192.168.2.10 with 32 bytes of data:
Reply from 192.168.2.10: bytes=32 time<1ms TTL=126
Reply from 192.168.2.10: bytes=32 time=1ms TTL=126
Reply from 192.168.2.10: bytes=32 time<1ms TTL=126
Reply from 192.168.2.10: bytes=32 time<1ms TTL=126

Ping statistics for 192.168.2.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:>ping 192.168.2.11

Pinging 192.168.2.11 with 32 bytes of data:
Reply from 192.168.2.11: bytes=32 time<1ms TTL=126

Ping statistics for 192.168.2.11:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:>
```

PC3 to PCs in LAN1

```
Cisco Packet Tracer PC Command Line 1.0
C:>ping 192.168.2.11

Pinging 192.168.2.11 with 32 bytes of data:
Reply from 192.168.2.11: bytes=32 time<1ms TTL=128
Reply from 192.168.2.11: bytes=32 time=9ms TTL=128
Reply from 192.168.2.11: bytes=32 time<1ms TTL=128
Reply from 192.168.2.11: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.2.11:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 9ms, Average = 2ms

C:>ping 192.168.1.11

Pinging 192.168.1.11 with 32 bytes of data:
Reply from 192.168.2.1: Destination host unreachable.

Ping statistics for 192.168.1.11:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
    C:>
```

Lessons Learned:

- Two routers form a static connection to connect two different networks
- Default gateways allow devices to leave their LAN
- Each interface belongs to a different network
- The two routers are connected to each other via a WAN link using a crossover cable