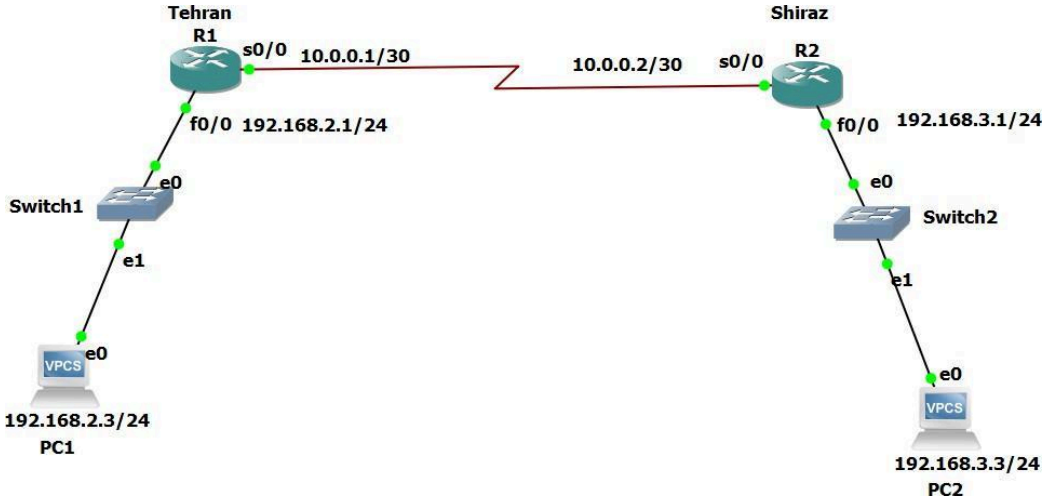
Implement the concept of static routing

Here is the Topology on which we did the experiment



Scenario

Suppose that your company has 2 branches located in Tehran and Shiraz.

As the administrator of the network, you are tasked to connect them so that employees in the two LANs can communicate with each other.

After careful consideration you decided to connect them via static route.

Step1. Configuring interfaces on R1

R1(Config)#int fa0/0

R1(Config-if)#ip address 192.168.2.1

255.255.255.0 R1(Config-if)#no

shutdown

R1(Config-if)#ex

R1(Config)#int s0/0

R1(Config-if)#ip address 10.0.0.1

255.255.255.0 R1(Config-if)#no

shut

R1(Config-if)#cloc

k rate 64000

R1(Config-if)#ex

```
R1(config)#int f 0/0
R1(config-if)#ip add
R1(config-if)#ip address 192.168.2.1 255.255.255.0
R1(config-if)#no shut
R1(config-if)#ex
R1(config)#
*Mar  1 00:02:20.951: %LINK-3-UPDOWN: Interface FastEthernet0/0, changed state to up
*Mar  1 00:02:21.951: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
```

```
R1(config)#int s0/0
R1(config-if)#ip addr
R1(config-if)#ip address 10.0.0.1 255.255.255.252
R1(config-if)#no shut
R1(config-if)#clock
R1(config-if)#clock r
R1(config-if)#clock rate 64000
R1(config-if)#ex
```

Step2.Configure interfaces on R2

R1(Config)#int s0/0

R1(Config-if)#ip address 10.0.0.2

255.255.255.252 R1(Config-if)#no shut

R1(Config-if)#clock

rate

R1(Config-if)#ex

R1(Config)#int fa0/0

R1(Config-if)#ip address 12.168.3.1

255.255.255.0 R1(Config-if)#no shut

R1(Config-if)#ex

```
R2(config)#int s 0/0
R2(config-if)#ip addr
R2(config-if)#ip address 10.0.0.2 255.255.255.252
R2(config-if)#no shut
R2(config-if)#clock rate
*Mar  1 00:04:45.227: %LINK-3-UPDOWN: Interface Serial0/0, changed state to up
R2(config-if)#clock rate
*Mar  1 00:04:46.231: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0, changed state to up
R2(config-if)#exit
R2(config)#int f 0/0
R2(config-if)#ip addr
R2(config-if)#ip address 12.168.3.1 255.255.255.0
R2(config-if)#no shut
R2(config-if)# ex
R2(config)#
*Mar  1 00:05:28.943: %LINK-3-UPDOWN: Interface FastEthernet0/0, changed state to up
*Mar  1 00:05:29.943: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
```

Step3. show ip route command

R1(Config)#do s hip route

```
R1(config)#do sh ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-user static route
       o - ODR, P - periodic downloaded static route

Gateway of last resort is not set

     10.0.0.0/30 is subnetted, 1 subnets
C       10.0.0.0 is directly connected, Serial0/0
C    192.168.2.0/24 is directly connected, FastEthernet0/0
```

R2(Config)#do s hip route

```
R2(config)#do sh ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-user static route
       o - ODR, P - periodic downloaded static route

Gateway of last resort is not set

     10.0.0.0/30 is subnetted, 1 subnets
C       10.0.0.0 is directly connected, Serial0/0
C    192.168.3.0/24 is directly connected, FastEthernet0/0
```

Step4. Configuring static route on R1

R1(Config-if)#ip route 192.168.3.0 255.255.255.0 10.0.0.2

R1(Config-if)#do s hip route

```
R1(config)#ip route 192.168.3.0 255.255.255.0 10.0.0.2
```

```
R1(config)#do sh ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-user static route
       o - ODR, P - periodic downloaded static route

Gateway of last resort is not set

     10.0.0.0/30 is subnetted, 1 subnets
C       10.0.0.0 is directly connected, Serial0/0
C    192.168.2.0/24 is directly connected, FastEthernet0/0
S    192.168.3.0/24 [1/0] via 10.0.0.2
```

Step5. Configuring static route on R2

R2(Config)#ip route 192.168.2.0 255.255.255.0 10.0.0.1

R2(Config)#do sh ip route

```
R2(config)#ip route 192.168.2.0 255.255.255.0 10.0.0.1
```

```
R2(config)#do sh ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-user static route
       o - ODR, P - periodic downloaded static route

Gateway of last resort is not set

     10.0.0.0/30 is subnetted, 1 subnets
C       10.0.0.0 is directly connected, Serial0/0
S    192.168.2.0/24 [1/0] via 10.0.0.1
C    192.168.3.0/24 is directly connected, FastEthernet0/0
```

Step6. Manually set an IP on PC1

PC>1 ip 192.168.2.3/24 192.168.2.1

```
PC1> ip 192.168.2.3/24 192.168.2.1
Checking for duplicate address...
PC1 : 192.168.2.3 255.255.255.0 gateway 192.168.2.1
```

Step7. Manually set an IP on PC2

PC>2 ip 192.168.3.3/24 192.168.3.1

```
PC2> ip 192.168.3.3/24 192.168.3.1
Checking for duplicate address...
PC1 : 192.168.3.3 255.255.255.0 gateway 192.168.3.1
```

Step8. Try to ping each far end network

PC1>ping 192.168.3.3

PC2>ping 192.16832.3

```
PC1> ping 192.168.3.3
192.168.3.3 icmp_seq=1 timeout
84 bytes from 192.168.3.3 icmp_seq=2 ttl=62 time=31.563 ms
84 bytes from 192.168.3.3 icmp_seq=3 ttl=62 time=30.960 ms
84 bytes from 192.168.3.3 icmp_seq=4 ttl=62 time=30.707 ms
84 bytes from 192.168.3.3 icmp_seq=5 ttl=62 time=30.590 ms
```

```
PC2> ping 192.168.2.3
84 bytes from 192.168.2.3 icmp_seq=1 ttl=62 time=31.296 ms
84 bytes from 192.168.2.3 icmp_seq=2 ttl=62 time=30.814 ms
84 bytes from 192.168.2.3 icmp_seq=3 ttl=62 time=31.184 ms
84 bytes from 192.168.2.3 icmp_seq=4 ttl=62 time=30.092 ms
84 bytes from 192.168.2.3 icmp_seq=5 ttl=62 time=31.135 ms
```