

LAB 9.1 — Static Routing

Topology

PC1 — R1 — R2 — R3 — PC2

IP Addressing

Device	Interface	IP Address	Mask
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PC1	NIC	10.0.0.10	/24
R1	g0/0	10.0.0.1	/24
R1	g0/1	11.0.0.1	/24
R2	g0/0	11.0.0.2	/24
R2	g0/1	12.0.0.1	/24
R3	g0/0	12.0.0.2	/24
R3	g0/1	13.0.0.1	/24
PC2	NIC	13.0.0.10	/24

Step 1: Configure IP Addresses

R1

```
conf t
interface g0/0
ip address 10.0.0.1 255.255.255.0
no shut
interface g0/1
ip address 11.0.0.1 255.255.255.0
no shut
```

R2

```
interface g0/0
ip address 11.0.0.2 255.255.255.0
no shut
interface g0/1
ip address 12.0.0.1 255.255.255.0
no shut
```

R3

```
interface g0/0
ip address 12.0.0.2 255.255.255.0
no shut
interface g0/1
ip address 13.0.0.1 255.255.255.0
no shut
```

PC1 and PC2 get IP + default gateway:

- PC1 GW: **10.0.0.1**
 - PC2 GW: **13.0.0.1**
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Step 2: Configure Static Routes

R1 → Towards PC2

```
ip route 13.0.0.0 255.255.255.0 11.0.0.2
```

R2 → Towards PC1 & PC2

```
ip route 10.0.0.0 255.255.255.0 11.0.0.1
ip route 13.0.0.0 255.255.255.0 12.0.0.2
```

R3 → Towards PC1

```
ip route 10.0.0.0 255.255.255.0 12.0.0.1
```

Step 3: Verification

```
show ip route
ping 13.0.0.10 (from PC1)
ping 10.0.0.10 (from PC2)
```

Expected result: **All pings successful**

LAB 9.2 — Floating Static Route (Backup Route)

Topology Adds:

Add a backup link between **R1 ↔ R3**:

R1 (g0/2 14.0.0.1) ---- (14.0.0.2 g0/2) R3

Step 1: Configure Backup Link

R1

```
interface g0/2
ip address 14.0.0.1 255.255.255.0
no shut
```

R3

```
interface g0/2
ip address 14.0.0.2 255.255.255.0
no shut
```

Step 2: Create Backup Route with Higher AD

Primary route on R1:

```
ip route 13.0.0.0 255.255.255.0 11.0.0.2
```

Backup route (floating):

```
ip route 13.0.0.0 255.255.255.0 14.0.0.2 10
```

(10 = higher AD → used only if primary fails)

Step 3: Test Failover

1. Verify routing table:

```
show ip route
```

You should see only the primary path.

2. Shut down primary link:

```
interface g0/1  
shutdown
```

3. Now routing table will show **backup route active**.
4. Bring link back:

```
no shutdown
```