

Router Functions



- A router has two main functions:
 - Determining the best path to available networks
 - Forwarding traffic to those networks

The Routing Table

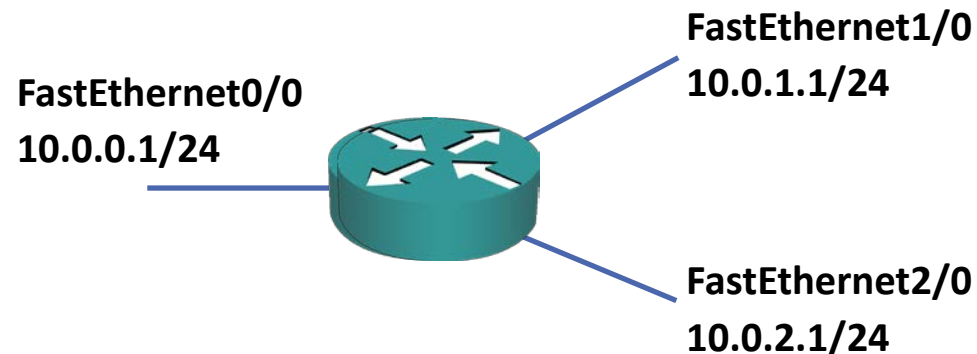


- The best available path or paths to a destination network are listed in a router's routing table and will be used for forwarding traffic
- A routing table consists of directly connected networks and routes configured statically by the administrator or dynamically learned through a routing protocol.

Connected and Local Routes

- The administrator configures IP addresses on the router's interfaces

```
interface FastEthernet0/0
ip address 10.0.0.1 255.255.255.0
interface FastEthernet1/0
ip address 10.0.1.1 255.255.255.0
interface FastEthernet2/0
ip address 10.0.2.1 255.255.255.0
```



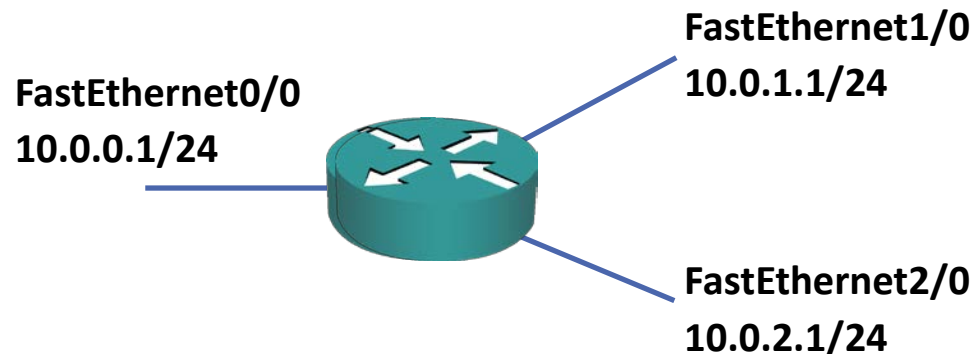
show ip route - Connected Routes

- This will automatically enter connected routes into the routing table:

```
R1#sh ip route
```

```
C          10.0.0.0/24 is directly connected, FastEthernet0/0  
C          10.0.1.0/24 is directly connected, FastEthernet1/0  
C          10.0.2.0/24 is directly connected, FastEthernet2/0
```

- If any traffic for the 10.0.0.0/24 network is received in another interface on the router, it will forward it out interface FastEthernet0/0

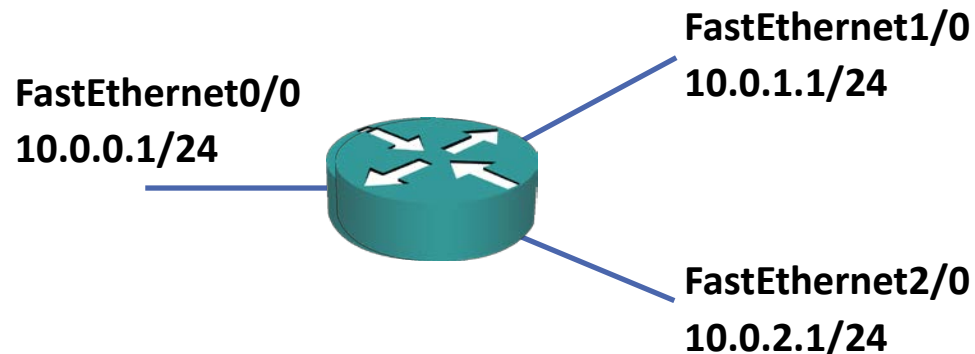


show ip route - Local Routes

- From IOS 15, local routes will also be added to the routing table
- Local routes always have a /32 mask and show the IP address configured on the interface

```
R1#sh ip route
```

```
L          10.0.0.1/32 is directly connected, FastEthernet0/0  
L          10.0.1.1/32 is directly connected, FastEthernet1/0  
L          10.0.2.1/32 is directly connected, FastEthernet2/0
```



Lab

