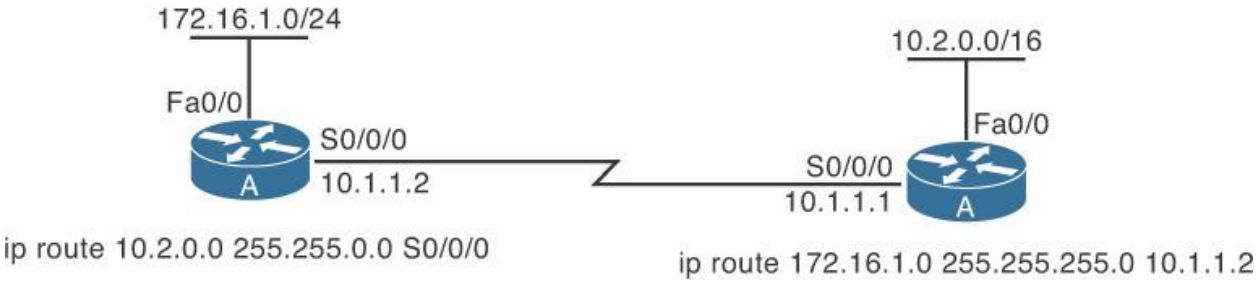
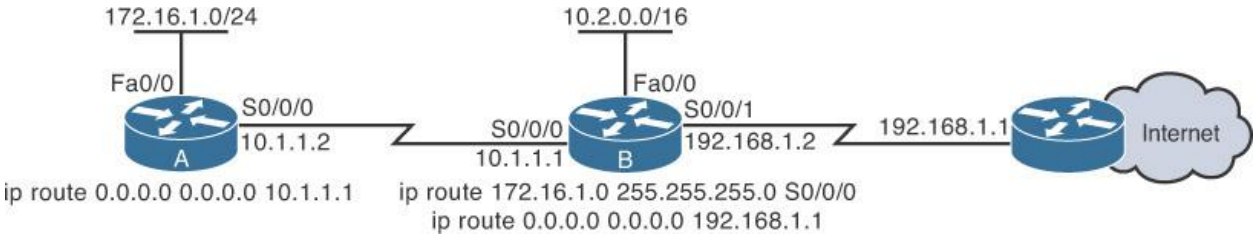
Configure & Verify Static Routing:

- When routers learn from a Network administrator, it is called a static routing.
- In Static Routing administrator manually inputs all the routing table information.
- Static route tells network devices about exact location & only work in small network.
- In static routing, we must add all network locations manually or statically in router.
- If any change occurs in the network, admin is responsible to update it in all routers.
- Keep in mind, that a static route will have a default administrative distance (AD) of 1.
- To keep route all time in Routing table, permanent keyword to end of route statement.
- This keyword will keep the route in the table even if the router interface goes down.



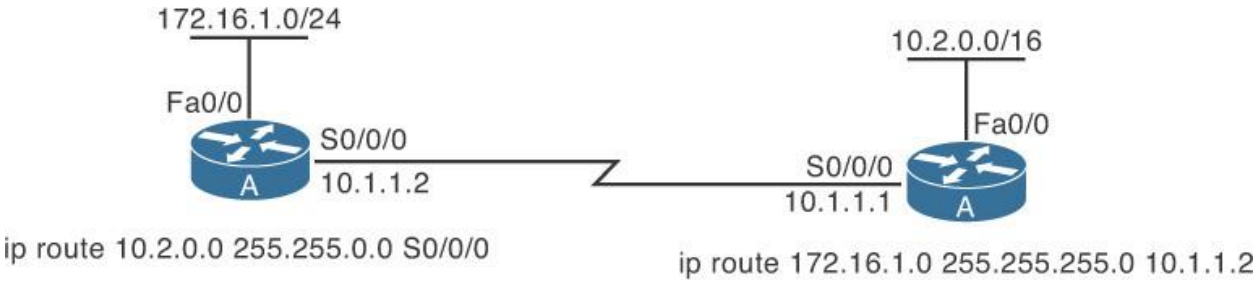
Default Route:

- A Default Route also known as the gateway of last resort is a special type of static route.
- Default route is route that router uses to forward an incoming packet when no other route.
- This is method where all routers are configured to send all packets towards a single router.
- Where a static route specifies a path, a router should use to reach a specific destination.
- Default route specifies a path router should use if it doesn't know how to reach destination.
- Default Route is Network Route used by a router when there is no other known route exists.
- Default Route is used by router when there is no other route for IP destination address.
- All the Internet Protocol with unknown destination address are sent to the default route.
- If no default route is set router will discard all packets with destination addresses not found.
- This is very useful method for small networks or for networks with single entry & exit point.
- All zero (0.0.0.0) in network portion and subnet mask represent all networks and all hosts.
- A default route configured by the "IP Route" command is called the default static route.



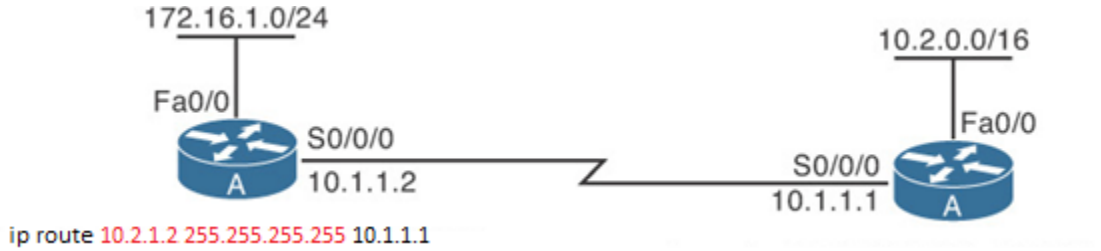
Network Route:

- Network Route used by a router when there is no other known route exists.
- All the IP with unknown destination address are sent to the default route.
- Network Route is route for a classful network most entries are network routes.



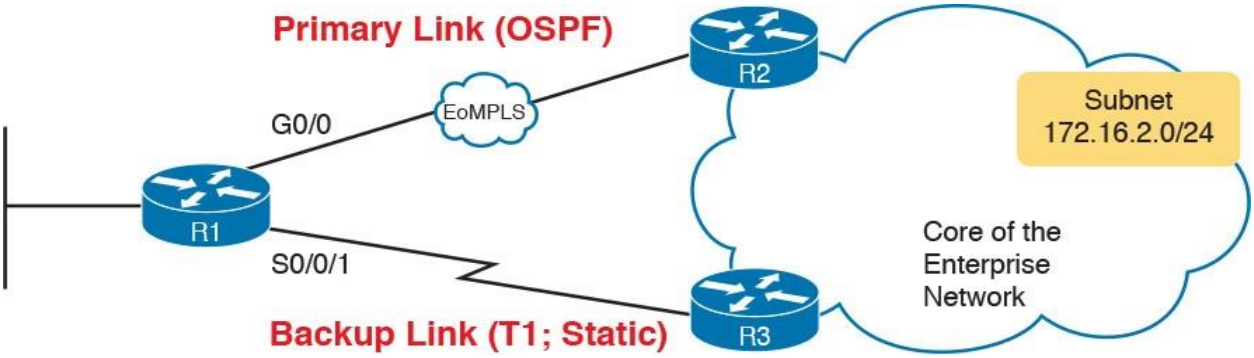
Host Route:

- It is where destination address is a specific device IP with a subnet mask of /32 for IPv4.
- It is where destination address ins specific device IP with a subnet mask /128 for IPv6.
- Also, installed Automatically when an IP address is configured on the router interface.
- Hosts attached directly connected to routers are host routes & route for certain hosts.
- They are advertised with a mask all 1's indicating a single destination is the Host Route.
- An engineer might use host routes to direct packets sent to one host over one path.



Floating Static Routes:

- Floating static route is route that has higher AD then the current route in a routing table.
- The Floating Static Route are very useful, when providing a backup to a primary link.
- Static Floating route is static route like any other but with added AD in the configuration.
- Static floating route is the same as normal static route except that this kind of static route.
- That has administrative distance configured to some value higher than 1 of default value.
- As we know, that a static route will have administrative distance (AD) of 1 by default.
- Router ignores static route during times when the better routing protocol route is known.
- It is used for a Backup Static Route, a second route is defined with a high Preference AD.
- If the first Primary link fails, then this floating static route is used as a Backup link to use.



Configure & Verify Static Routing
R1(config)# ip route 0.0.0.0 0.0.0.0 192.168.12.2
R1(config)# ip route 0.0.0.0 0.0.0.0 ethernet0/1
R1(config)# ip route 192.168.2.0 255.55.255.0 192.168.12.2
R1(config)# ip route 192.168.2.0 255.55.255.0 ethernet 0/1
R1(config)# ip route 192.168.2.1 255.55.255.255 192.168.12.2
R1(config)# ip route 2.0.0.0 255.0.0.0 192.168.12.2 R1(config)# ip route 2.0.0.0 255.0.0.0 192.168.21.2 5
R1(config)# ip route 0.0.0.0 0.0.0.0 192.168.12.2 R1(config)# ip route 0.0.0.0 0.0.0.0 192.168.21.2 5
R1# show ip route
R1# show ip route connected
R1# show ip route static
R1# show ip route 2.2.2.2
R1# show ip route 192.168.2.0