**Assigning IP address to the routers - Configuring routing protocols-**

Assigning IP addresses to routers and configuring routing protocols are essential tasks in setting up a network. Here's a step-by-step overview of how to assign IP addresses to routers and configure routing protocols:

1. Assigning IP Addresses to Routers:

* Access the router's configuration interface, typically through a Command Line Interface (CLI) or a web-based management interface.
* Identify the interfaces on the router that require IP addresses. These interfaces could be Ethernet, Fast Ethernet, Serial, or other interface types.
* Determine the IP address and subnet mask for each interface. Ensure that the IP addresses fall within the same subnet range and are unique for each interface.
* Configure the IP address and subnet mask on each router interface using the appropriate commands or settings in the router's configuration interface.

1. Enabling Routing Protocols:

* Identify the routing protocols you intend to use in your network design, such as OSPF, EIGRP, or RIP.
* Access the router's configuration interface and enable the desired routing protocols using the appropriate commands or settings.
* Specify the networks or interfaces that should participate in the routing protocol by configuring their network addresses or interface names.
* Configure any additional parameters required for the routing protocols, such as authentication, timers, or administrative distances.

1. Configuring Routing Protocol Parameters:

* Depending on the routing protocol, additional configuration parameters may be necessary to ensure proper operation. These parameters may include the router ID, area assignments (for OSPF), autonomous system numbers (for EIGRP), or route redistribution.
* Consult the documentation or specific guidelines for the routing protocol you are configuring to determine the necessary parameters and configuration syntax.

1. Establishing Adjacency and Neighbor Relationships:

* For some routing protocols, routers need to establish adjacency or neighbor relationships with other routers to exchange routing information.
* Ensure that the necessary configuration parameters, such as authentication keys, timers, and interface settings, are properly configured on neighboring routers to enable the establishment of adjacencies.

1. Verifying and Testing:

* After configuring IP addresses and routing protocols, verify the configurations using appropriate commands or tools provided by the router's operating system.
* Verify that the routing table on each router contains the expected routes and that adjacencies are established with neighboring routers.
* Test network connectivity by attempting to ping or communicate with devices on different networks to confirm that routing is functioning as expected.

1. Monitoring and Maintenance:

* Regularly monitor the routing table and network performance to ensure proper routing and address any issues that may arise.
* Periodically review and update routing protocol configurations as the network evolves or new requirements emerge.

It's important to consult the documentation and resources provided by the router vendor and the specific routing protocol specifications for accurate configuration commands and guidelines. Each router model and routing protocol may have variations in configuration syntax and capabilities.