

SEATWORK 2**MARASIGAN, VEM AIENSI A.**

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Explain and Discuss the following:**1. Static Routing Protocol**

This network routing protocol is ideal for small networks with a few routers. This is because static routing is done by manually configuring the devices ip addresses, subnet mask, and default gateways to define the routes of the network. This is also why it is not ideal for large scale networks because static routing is mainly done through manual configuration.

2. Dynamic Routing Protocol

On the other hand, this network routing approach involves the use of servers to dynamically make network paths or routes to end devices and does not require manual configuration in end devices. This makes it suitable for large scale networks that has a lot of routers, devices, etc.

3. OSPF

This means Open Shortest Path First which is a link-state dynamic routing protocol. From the word itself, it finds the shortest path between routers using Dijkstra's algorithm and exchanges link-state information with neighboring routers. Hence, it supports hierarchical routing, scalability, and fast convergence in large networks.

4. RIP

Routing Information Protocol, or RIP, is another dynamic routing protocol that uses the Bellman-Ford algorithm to find the best network path for devices. However, it is only ideal for small networks as it has a maximum limit of 15 hop counts, making it less ideal for large networks.

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5. IS-IS

IS-IS, meaning Intermediate System to Intermediate System, is a link-state dynamic routing system that is commonly used in larger networks, notably in internet service provider (ISP) contexts. It works in the same way as OSPF, employing Dijkstra's algorithm to find the shortest paths. IS-IS is adaptable and scalable since it supports many network protocols and uses a hierarchical addressing. This routing system usually operates with Border Gateway Protocol or BGP in ISP networks.

6. EIGRP

EIGRP is a hybrid routing protocol that combines aspects of link-state and distance-vector protocols. EIGRP calculates routes and maintains a topology table using the Diffusing Update Algorithm (DUAL). It is effective for both small and big networks since it enables load balancing, quick convergence, and partial updates. Lastly, EIGRP works with both IPv4 and IPv6.

7. BGP

An outer gateway protocol called BGP is used on the internet to communicate routing data between various autonomous systems (AS). BGP is an inner gateway protocol (IGP) that concentrates on the exchange of routing data between various businesses or service providers. BGP routes depend on policy considerations such as path length, network preferences, and QoS requirements. It allows the internet to function by building and maintaining routing paths across different networks.

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8. Autonomous System

A group of networks or routers operating under a single administrative domain is known as an Autonomous System, or AS. An AS Number is a distinctive identification assigned for each AS. ASNs are used in BGP to identify and share routing information between different organizations or ISPs. An AS is in charge of overseeing its own routing procedures, links to other Autonomous Systems, and various routers and networks.

9. Wildcard Mask

Wildcard Mask defines the range of addresses or subnets that is permitted in the network. This is usually the inverse of IP addresses or subnet masks where 0 bits represent the bits that must match exactly, and 1 bits represent the bits that can vary or be "wild.". Its commonly used for Access control lists to define which IP addresses or subnet masks are allowed to connect to the network.

10. IGRP

IGRP, which means Interior Gateway Routing Protocol, is Cisco's exclusive distance-vector routing protocol. It was frequently used in earlier Cisco networks which was then replaced by EIGRP. Routes are determined by IGRP using a variety of characteristics, including as bandwidth, delay, reliability, and traffic. IGRP offers load balancing and loop avoidance, however, it has limitation in scalability and won't operate in non-Cisco routers.