Distance-vector routing is a type of routing algorithm used in computer networks. It's a distributed algorithm that enables routers in a network to calculate the shortest path to a destination based on the estimated distance, often measured in terms of hop count. Here are some key characteristics of distance-vector routing:

1. \*\*Distance Vector:\*\*

- Each router maintains a table (vector) that contains the distance (cost or metric) to all reachable destinations in the network.

- The vector also includes information about the next-hop router to reach each destination.

2. \*\*Bellman-Ford Algorithm:\*\*

- Distance-vector routing is often implemented using the Bellman-Ford algorithm, which iteratively calculates the shortest path to all destinations in the network.

3. \*\*Routing Table Updates:\*\*

- Routers exchange their distance vectors with neighboring routers periodically or when there is a change in the network topology.

- When a router receives a distance vector from a neighbor, it updates its own vector and recalculates the shortest paths.

4. \*\*Hop Count as Metric:\*\*

- The metric used in distance-vector routing is often the hop count, representing the number of routers or hops between the source and destination.

5. \*\*Convergence:\*\*

- The algorithm converges over time as routers exchange information and update their distance vectors.

- Convergence time can be a drawback, especially in large networks or when there are frequent changes in the network topology.

6. \*\*Count to Infinity Problem:\*\*

- Distance-vector routing is susceptible to the "count to infinity" problem, where a router may incorrectly believe it has found a shorter path when there is a failure in the network.

7. \*\*Routing Information Protocol (RIP):\*\*

- RIP is a well-known example of a distance-vector routing protocol.

- RIP uses hop count as its metric and has limitations in terms of scalability and convergence time.

Despite its limitations, distance-vector routing protocols are still used in certain scenarios, particularly in smaller networks or environments where the simplicity of the algorithm is more important than rapid convergence. More modern protocols, such as OSPF (Open Shortest Path First), use link-state routing and are often preferred in larger and more complex networks.