

Routing Protocol	RIP (Routing Information Protocol)	EIGRP (Enhanced Interior Gateway Routing Protocol)	OSPF (Open Shortest Path First)
Type	Distance Vector	Hybrid	Link State
Metric	Hop Count	Bandwidth, Delay, Reliability, Load, MTU	Cost
Administrative Distance (AD)	120	90	110
Convergence Speed	Slow	Fast	Fast

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Loop Prevention	Split Horizon, Poison Reverse, Hold-Down Timers	Feasible Successor, Reliable Transport Protocol (RTP)	SPF Algorithm
Scalability	Limited	Good	Excellent
Load Balancing	Equal Cost	Unequal Cost	Equal Cost
Security	No Authentication	MD5 Authentication	MD5 Authentication

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VLSM Support	No	Yes	Yes
Triggered Updates	Yes	Yes	Yes
IPv6 Support	Yes, but only for RIPng	Yes, but only for EIGRPv6	Yes, for OSPFv3
Advantages	Easy to configure and deploy; Low resource usage	Fast convergence; Supports multiple metrics; Good scalability	Fast convergence; Supports multiple paths; Good scalability; Secure and reliable

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Disadvantages	Limited scalability; Slow convergence; No support for VLSM	Complex configuration; Proprietary protocol	Complex configuration; High resource usage; May generate excessive routing updates

Here's a brief explanation of each column:

- **Type:** The routing protocol classification, based on how they exchange routing information and build the network topology database.
- **Metric:** The value used to determine the best path to a destination network.
- **Administrative Distance (AD):** The value assigned to each routing protocol to determine the trustworthiness of the routing information received from that protocol. A lower AD value means higher trust.
- **Convergence Speed:** The time it takes for the routers to adjust their routing tables when a change occurs in the network topology.
- **Loop Prevention:** The mechanism used to prevent routing loops, where packets keep looping between two or more routers indefinitely.
- **Scalability:** The ability of the routing protocol to handle large and complex networks.
- **Load Balancing:** The ability of the routing protocol to distribute traffic across multiple paths to a destination network.
- **Security:** The ability of the routing protocol to authenticate routing information and prevent attacks, such as spoofing and injection.

- VLSM Support: The ability of the routing protocol to support Variable Length Subnet Masking, where different subnets have different subnet masks.
- Triggered Updates: The ability of the routing protocol to send updates immediately after a change occurs in the network topology, instead of waiting for the regular update interval.
- IPv6 Support: The ability of the routing protocol to support IPv6 addresses and networks.
- Advantages: The main benefits of using the routing protocol.
- Disadvantages: The main limitations or drawbacks of using the routing protocol.