

Administrative Distance:

- o Administrative distance is the feature that routers use to select best path.
- o Administrative Distance (AD) defines the reliability of a routing protocol.
- o The administrative Distance (AD) number is start from 0 and end on 255.
- o AD has only local significance and is not advertised in the routing updates.
- o The smaller the administrative distance value, the more reliable the protocol.
- o Router is running multiple routing protocols; AD is to determine trustable protocol.
- o Routing Protocol with lowest Administrative Distance (AD) wins put in routing table.

Route Source	Default Administrative Distance
Connected Interfaces	0
Static Route	1
EIGRP Summary	5
External BGP	20
EIGRP	90
OSPF	110
IS-IS	115
RIP	120
External EIGRP	170
Internal BGP	200
Unknown	255

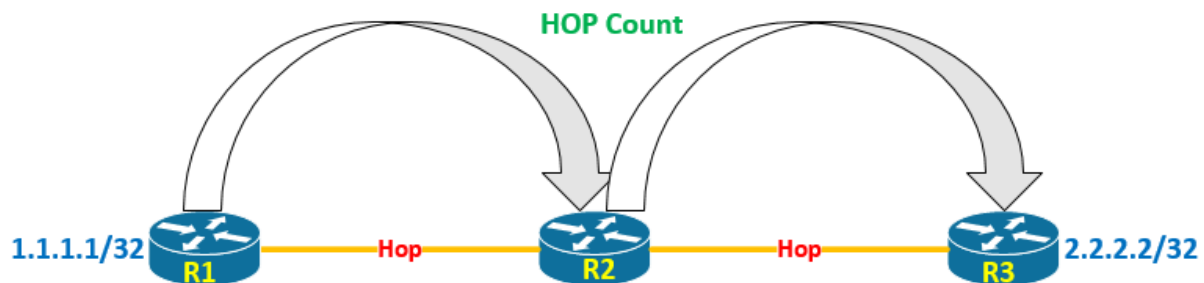
Metric:

If a router learns two different paths for the same network from the same routing protocol, it has to decide which route is better and will be placed in the routing table. Metric is measure used to decide which route is better a lower number is better. Each routing protocol uses its own metric. For example, RIP uses hop counts as a metric, while OSPF uses cost. Different routing algorithms use different variables to compute the route metric. Some routing algorithms use only a single variable, while other advanced routing protocols may use more than one variable to determine the metric for a particular route.

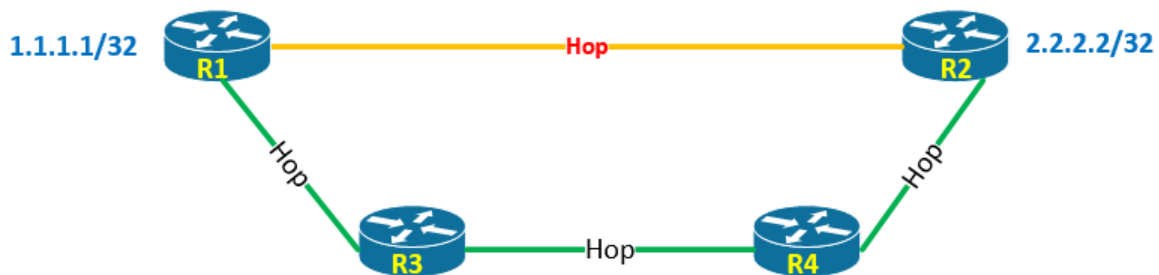
Protocols	Metric
Static	Administrator Decides
OSPF	Cost
RIP	Hop Counts
EIGRP	Composite Metrics(BW , Delay , Load , Reliability , MTU)
BGP	Path Counts OR Attributes

Example of Metric:

If the router has more than one route found by two different routing protocols, for the same destination network, the router chooses Administrative Distance to choose the best one. However, in some cases, there will be two paths found by the same protocol, to the same destination network. Here the Routing Protocol will use Route Metric value to find the best path. Hop count is the number of routers through which data must pass from source network to reach the destination. Hop Count = Number of Routers data must pass from source network to reach the destination.



Consider below network topology. Here we have two paths to reach the Destination Network from the Source Network, Path 1 and Path 2. For Routing Information Protocol (RIP), the best path is the path with least Hop Count, which is Path 1 R1 to R2 directly one hop count.



However, if we consider the Bandwidth of the connecting links, 100 Kb Bandwidth along Path 1 is far less than that of 100 Mbps Bandwidth along Path 2 and practically it is better to send the traffic via Path 2, even we have one more Hop to cross to reach the destination 2.2.2.2.

