

Cisco™ CCNA : Routing Protocols

Routing Protocols

Routing protocols job is to maintain routing tables and route packets appropriately.

Examples of routing are RIP, IGRP, EIGRP, OSPF.

Routed Protocols

Routed protocols are used to transport user traffic from source node to destination node.

Examples of routed protocols are IP, IPX and AppleTalk.

Types of Routing Protocols

Distance Vector: Distance vector routing determines the direction and distance to any link in the internetwork. Smaller the metric, better the path. Distance vector routing is useful for smaller networks. Ex: RIP and IGRP.

Link State: Also known as SPF algorithms, SPF generates the exact topology of the entire network for route computation by listening to the first hand information. Bandwidth and delay are the most widely used metrics. Ex: OSPF and NLSP.

Balanced Hybrid: Balanced Hybrid combines some aspects of Link State and Distance Vector routing protocols. It uses distance vectors with more accurate metrics to determine the best paths to destination networks. Ex: EIGRP

Classful Routing Protocols

Classful routing protocols do not exchange subnet information during routing information exchanges. The summarization is always done automatically at major network boundaries.

Ex: RIP v1, IGRP

Classless Routing Protocols

In classless routing protocols, subnet information is exchanged during routing updates. This results in more efficient utilization of IP addresses. The summarization in classless networks is manually controlled. Ex: RIP v2, EIGRP, OSPF, BGP v4, and IS-IS

Default Administrative distances

Directly Connected Interface-----> 0
Static Route-----> 1
Internal EIGRP-----> 90
IGRP-----> 100
OSPF-----> 110
RIP-----> 120
IS-IS-----> 115
Unknown 255

External BGP-----> 20
Internal BGP-----> 200

An administrative distance of 0 represents highest trustworthiness of the route.
An administrative distance of 255 represents the lowest trustworthiness of the route.

ARP

Address Resolution Protocol (ARP) is used to resolve a hosts IP address to its physical address (such as MAC address), to allow communication on a multi-access medium such as ethernet.

Reverse ARP (RARP) is used to obtain an IP address from physical address (such as MAC). RARP broadcast may be used to obtain IP address to boot by diskless workstations over a network.