

Cisco Routing Protocols

A routing protocol defines the set of rules used by a router when it communicates between neighbor routers.

Routing Protocol	Dynamic Routing		Metric	Default Admin.				
	Type	Algorithm		Distance	Dest. IP	VLSM(1)	Updates	Notes
Connected	na	na	na	0				
Static Route	na	na	na	1				Manually coded
(s)RIP v1	Interior	Distance Vector/ Bellman-Ford	Hop Count	120	255.255.255.255	classful	30 secs.	15 hop max
(s)RIP v2	Interior	Distance Vector/ Bellman-Ford	Hop Count	120	224.0.0.9	classless	30 secs.	15 hop max
(s)IGRP	Interior	Distance Vector/ Bellman-Ford	Composite	100	255.255.255.255	classful	90 secs.	255 hop max
(s)EIGRP	Interior	Adv. Dist Vector/ DUAL (Diffusing Updt)	Composite	90	224.0.0.10 (Hello's)	classless	when req.	224.0.0.5
External EIGRP	Interior	Adv. Dist Vector/ DUAL (Diffusing Updt)	Composite	170		classless	when req.	
IS-IS		Link State - Hierarchical	Bandwidth	115		classless		
OSPF	Interior	Link State - Hierarchical	Bandwidth	110	224.0.0.5 / 6 (Hello's)	classless		
Internal BGP	Exterior	Advanced Distance Vector	Shortest AS Path	32768		classless		
External BGP	Exterior	Advanced Distance Vector	Shortest AS Path	32768		classless		

(1) Classful routing protocols send no subnet mask information with the routing updates, so all devices on the network **must use the same subnet mask**.
Classless routing protocols send **prefix mask** routing information with each update.

Static routes must always be redistributed by a routing protocol and always have the smallest administrative distance.

Routers, Bridges and Switches can help alleviate network **congestion**.

Route summarization - Used primarily with contiguous networks. The group of subnetworks and *summarize them as one network* (i.e. For **OSPF** - less LSA traffic. For **EIGRP**, by default, automatic summarization is not used. If VLSM is used, you need to disable auto summarization. For **BGP**, you need to use the *aggregate-address command* or summarized entry.

(s) = Automatically summarize to classful boundaries.

A **gateway of last resort** is not a default gateway. Default gateways are used by **hosts** to direct packets to a remote network if the destination logical address is not in the local segment.

The gateway of last resort is used to send packets to a destination network.

Default gateway is set by the ip default-gateway command.