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Lab Assignment - 7

Title: Configuring RIP routing protocol

Aim: Set-up a network - configure interfaces, IP addresses and routing protocols (RIP, OSPF, EIGRP, BGP).

Objectives: To understand and implement routing protocols RIP in Cisco Packet Tracer.

Theory:

1) Routing Algorithms:

- Distance vector routing: A distance-vector routing (DVR) protocol requires that a router inform its neighbours of topology changes periodically.

- Link state routing: Link state routing is a method in which each router shares its neighbourhoods knowledge with every other router in the inter-network.

- Path vector routing: A path-vector routing protocol is a network routing protocol which maintains the path information that gets updated dynamically.

2) RIP (Routing Information Protocol) Implementation:

⇒ RIP is a distance vector router protocol. Routers running the distance vector router protocol send all or a portion of their routing tables in routing-update messages to their neighbours.

Key features of RIP

1) updates of the network are exchanged periodically
2) updates are always broadcast.

5) Full routing tables are sent in updates

Difference between RIP v1 and RIP v2.

RIP v1
- sends update as broadcast
- Broadcast at 255.255.255.255
- Doesn't support authentication of updated messages.
- classful routing protocol

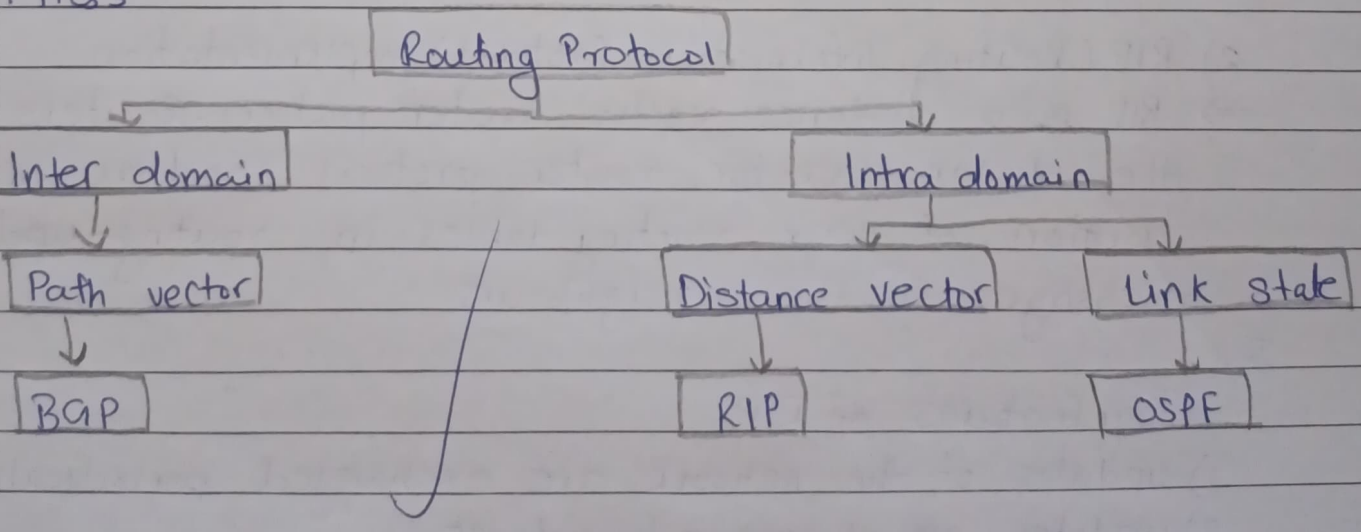
RIP v2
- sends update as multicast
- Multicast at 224.0.0.9.
- support authentication of RIP v2 update message.
- classless protocol updated supports classful.

RIP timers :- The timer controls the interval between routing updates.

Students observation:
Thus we have set up a network - configure interfaces, IP addresses and routing protocols.

FAQ's

Ans 1)



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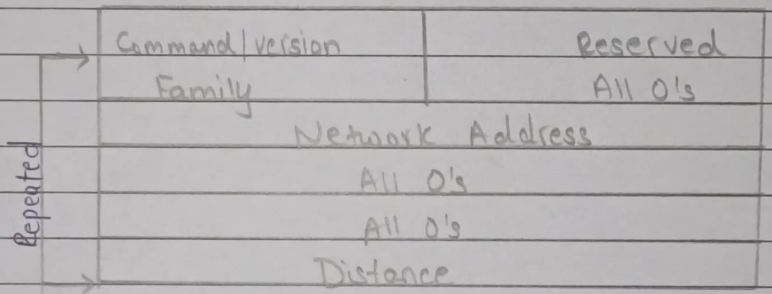
Ans 2) RIP uses a distance vector algorithm to decide which path to put a packet on, to get to its destination. Each RIP router maintains a routing table, which is a list of all the destinations the router knows how to reach. Each router broadcasts its entire routing table to its closest ~~destination~~ neighbours every 30 sec.

Ans 3) The message format is used to share information among differer routers. The RIP contains the following fields in a message:



Command: It is an 8-bit field that is used for request or reply. The value of the request is 1 and reply is 2.
Version: Version means that which version of the protocol we are using. suppose we are using the protocol of version 1, then we put the 1 in this field.

- Reserved: This is a reserved field, so it is ~~called~~ filled with zeroes.
- family: It is a 16-bit field. As we are using the TCP/IP family, so we put 2 value in this field
- Network Address: Defined as 14 bytes field. If we use the IPv4 version, then we use 4 bytes, and the other 10 bytes are all zeroes.
- Distance: This specifies the hop count. i.e. the number of hops used to reach the destination.

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