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Lab Assignment-5 ((N)
RIP

AIM: configure RIP

OBJECTIVES: To understand and implement RIP in cisco packet tracer.

THEORY:

I) ROUTING ALGORITHMS

i) DISTANCE VECTOR ROUTING
→ In this routing scheme, each router periodically shares its knowledge about the entire network with its neighbours.
→ Distance vector protocols such as RIP, determine path to remote networks using hop count as metric.

ii) LINK STATE ROUTING
→ OSPF and IS-IS are examples of link state routing.
→ Link-State protocols implement an algorithm called as shortest path first ((SPF), also known as Dijkstra's Algorithm] to determine the path to a remote destination.
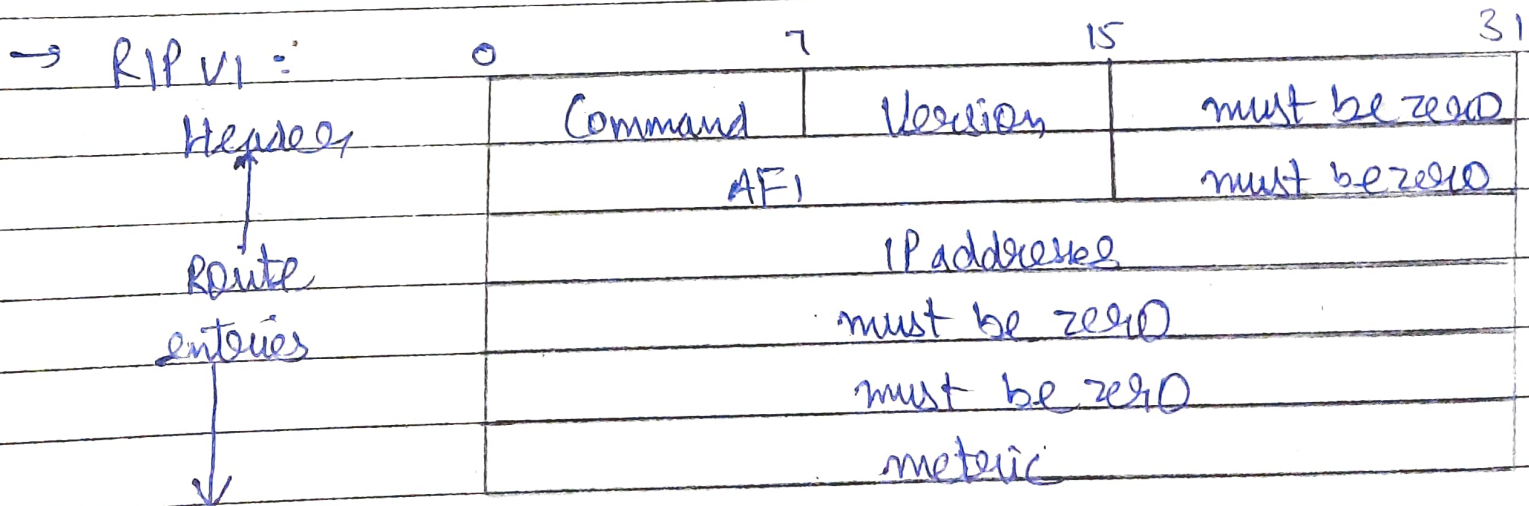→ There's no hope count limitation.

iii) PATH VECTOR ROUTING

→ Path vector protocols are used across domains. A router does not receive distance vector for a particular destination from its neighbour; instead a node receives distance as well as path information.
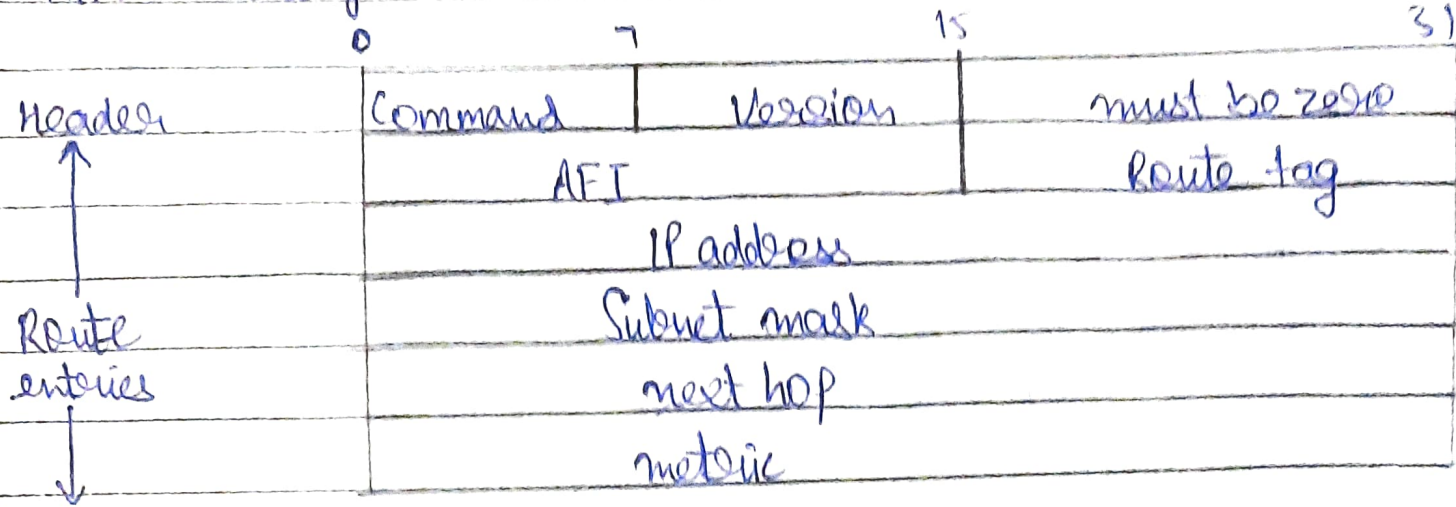
II) RIP

→ Routing Information protocol is a dynamic routing protocol that uses hop count as a routing metric to find the best path b/w source and destination network.

→ RIP MESSAGE FORMAT : A RIP message consists of a header and upto 25 route entries.

→ RIP V1 :

	0 7	15	31
Header	Command	Version	must be zero
	AFI		must be zero
Route entries	IP address		
	must be zero		
	must be zero		
	metric		

→ RIPV2 message

Header	Command (0-7)	Version (8-15)	must be zero (16-31)
	AFI		Route tag
Route entries	IP address		
	Subnet mask		
	next hop		
	metric		

→ Key features of RIP :

i) Updates of networks are exchanged periodically.
ii) Updates are always broadcasted.
iii) Full routing tables are sent in updates.
iv) Routers always trust routing info received from neighbouring routers.

→ Comparison b/w RIP v1 & RIPV2

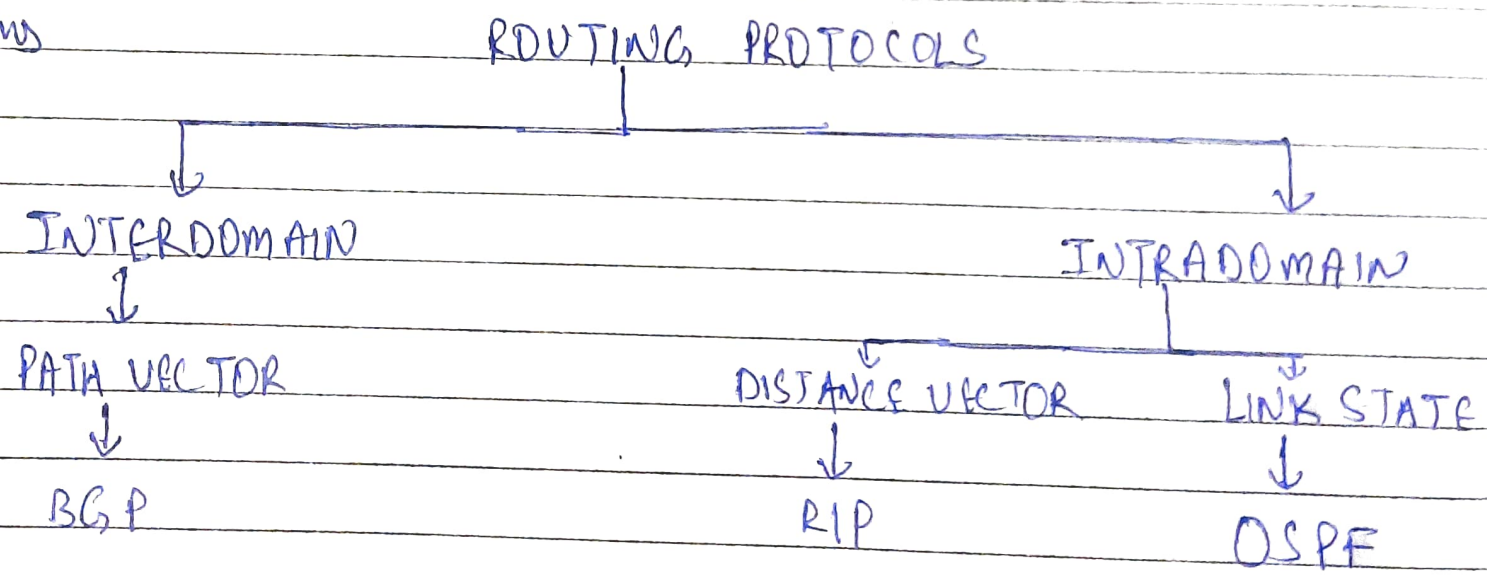| RIP V1	RIP V2
→ Sends updates as broadcasts.	→ Sends updates as multicast.
→ Broadcast at 255.255.255.255.	→ Multicast at 224.0.0.9.
→ Does not support entry any authentication of updated messages.	→ Supports authentication of RIPv2 update messages.
→ Classless RIP.	→ Classless RIP.

* RIP TIMERS:

→ RIP uses several timers to regulate its operation.
→ The update interval is interval at which routes that are learned by RIP are advertised to neighbours.
→ This timer controls interval b/w updates.
→ Commands used for configuring diff. timers - update - interval seconds;
route - timeout seconds;
holddown seconds;

FAQ

Q1 State the classification of routing protocols.

Ans   ROUTING PROTOCOLS

INTERDOMAIN   INTRADOMAIN

PATH VECTOR   DISTANCE VECTOR   LINK STATE

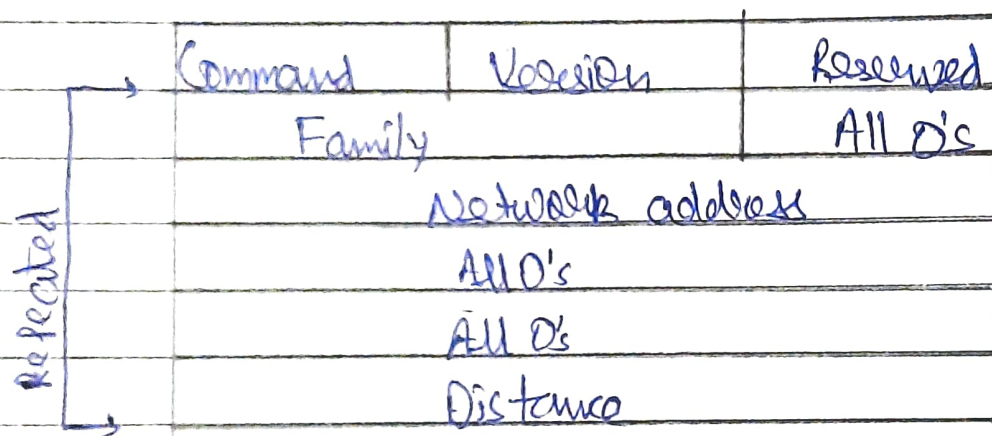BGP   RIP   OSPF

Q2 Explain some key features of RIP?

Ans key features of RIP

→ Updates of networks are exchanged periodically.
→ Updates are always broadcasted.
→ Full routing tables are sent in updates.
→ Routers always trust routing info received from neighbouring routers.

Q3 Draw and explain RIP message format?

Command	Version	Reserved
Family		All 0's
Network address		
All 0's		
All 0's		
Distance		

(Repeated — bracket on left spanning the rows)

→ Command: 8 bit field used for request (1) or reply(2)
→ Version: refers to version of protocol.
→ Reserved: filled with zeroes.
→ Family: 16-bit field
→ Network address: 14 bytes field. If we use IPv4, then we use 4 bytes, others 10 bytes are all zeroes.
→ Distance: specifies hop count.

30.1.1.1

30.1.1.2

ISR4321
Router0

ISR4321
Router1

10.1.1.3

20.1.1.3

2950-24
Switch0

2950-24
Switch1

PC-PT
PC0

PC-PT
PC1

PC-PT
PC2

PC-PT
PC3

10.1.1.1

10.1.1.2

20.1.1.1

20.1.1.2