

## Unit - 4

### 1) Routing :

\* Static routing

\* Dynamic routing .

### 2) Routing information Protocol : (RIP)

\* In RIP, routing updates are exchanged between neighbours approximately every 30 seconds .

\* RIP is also called as response message .

\* Response message was sent by routers .

\* Response messages are also known as advertisements .

\* It is an open standard

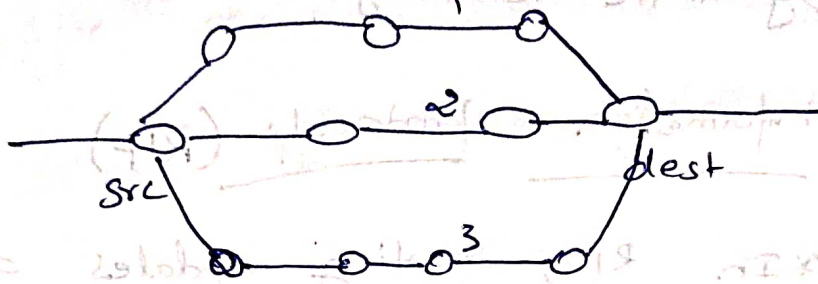
Protocol .

\* It uses Bellman and Ford's algorithm

\* Best path can be calculated using "Metric" "Hop Count" .

\* It supports link upto 15x hop  
count

\* support equal Cost load balancing.



### functions of RIP:

Update: updates the neighbour for every 30 sec

invalid: The router will start wait for an update from neighbor if it does not receive an update in 180 seconds then it marks the particular route as unreachable.

Hold down:

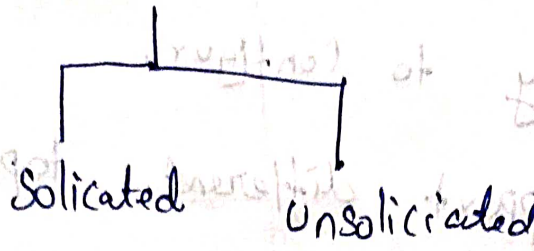
Every router can keep hold

upto 180 sec

Flush: flush the unreachable in 240 sec



## Request and Response.



## RIP v2.

\* RIP version 2 is designed to overcome some of the shortcomings in version 1.

## RIP msg format:

Command	Version	Reserved
family	vector	All 0's
Network address		
All 0's		
Distance		

## \* Advantages:

\* Easy to Configure

\* Support different topology

## Disadvantages:

\* High CPU memory utilization

\* Limited number of router

\* Slow convergence

\* Doesn't Support unequal cost

### load balancing

2) Distance

Vector

Link State

\* Bellman's and ford's algorithm is used to find shortest path.

\* Dijkstra's algorithm is used to calculate link state cost

\* sends msg to neighbor

\* Send msg to every other node in Ntwrk

\* Decentralized alg

\* Centralized alg

\* Sends larger updates

\* Sends smaller updates.



\* less cpu and memory space

\* Require more cpu and memory space

\* Simplest to impl and support

\* Expensive to impl and support

eg: RIP

eg: OSPF and BGP

### 3) OSPF:

\* OSPF stands for Open 'shortest path first' link state routing protocol.

\* OSPF is based on distributed map concept.

\* It is widely used in interior routing protocol.

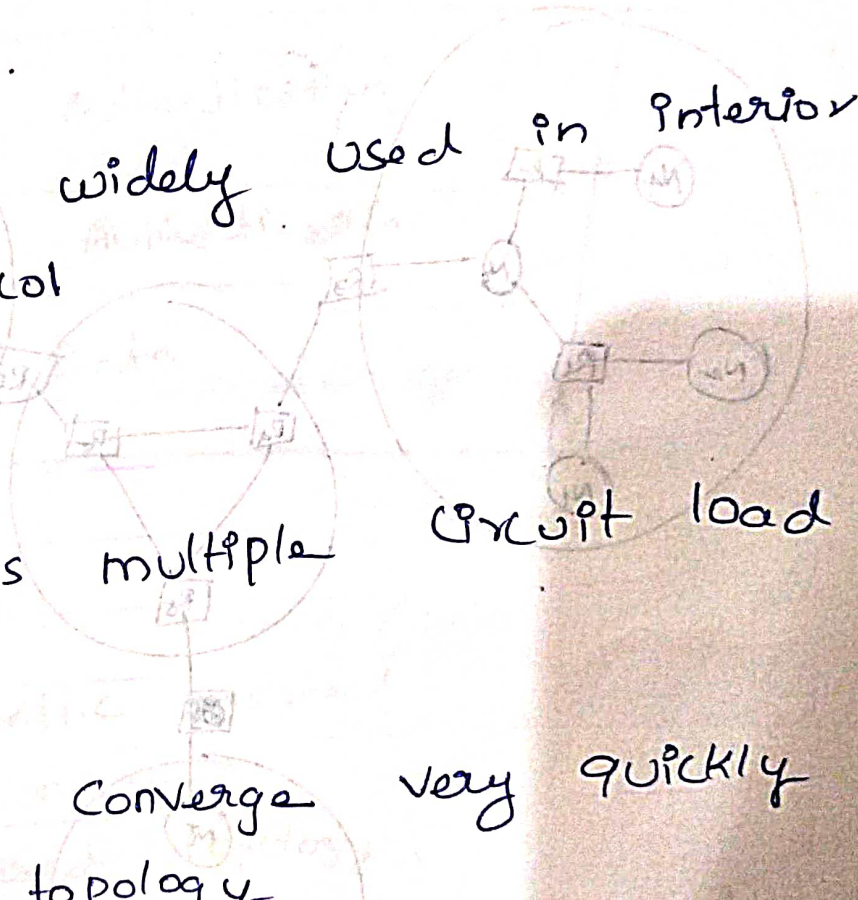
#### Features

\* It supports multiple circuit load balancing.

\* OSPF can converge very quickly to network topology.

\* It supports multiple metrics.

\* Supports for variable length of subnetting.



\* OSPF uses four types of

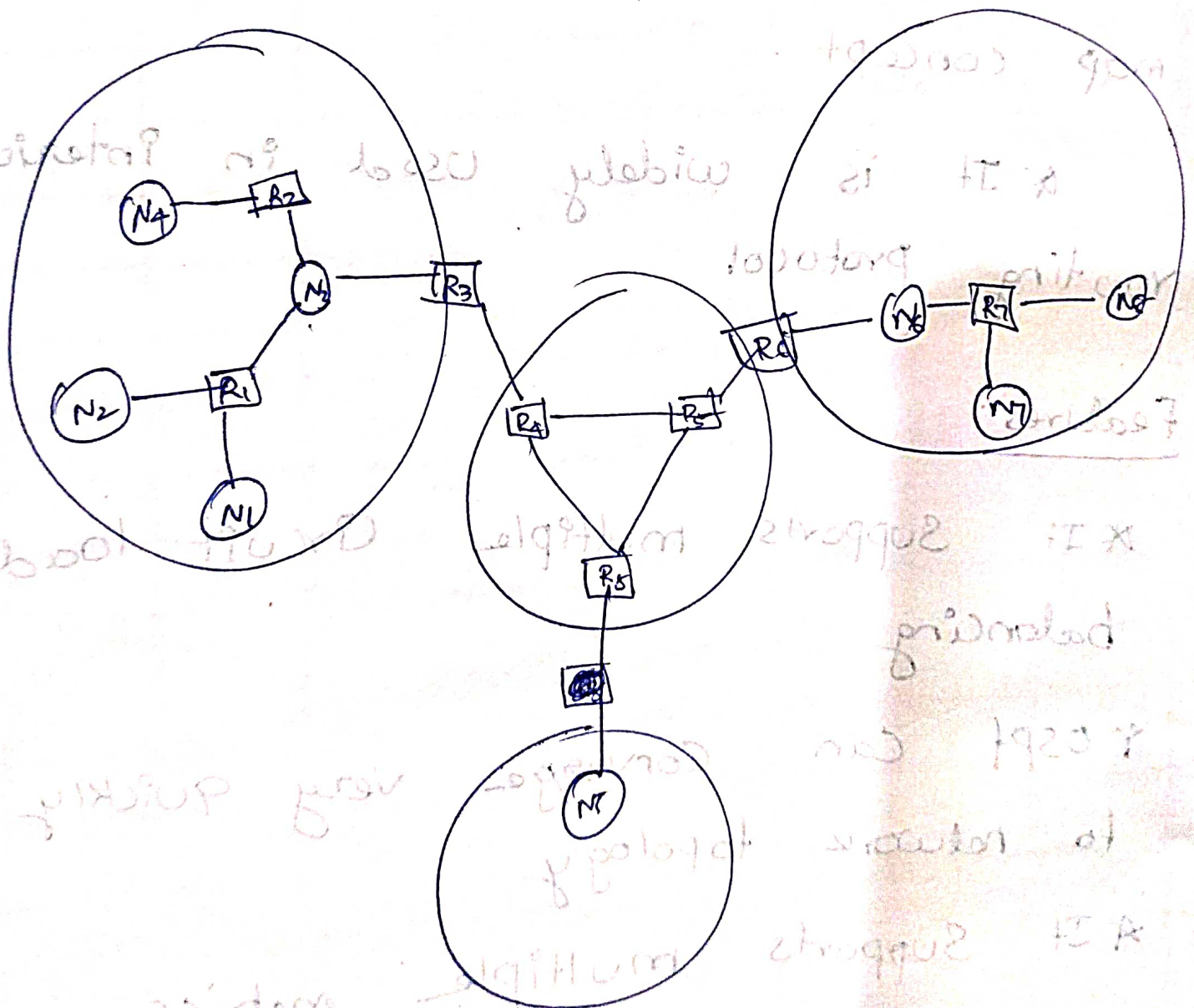
routers: they are

\* Internal router

\* Area Bounded router

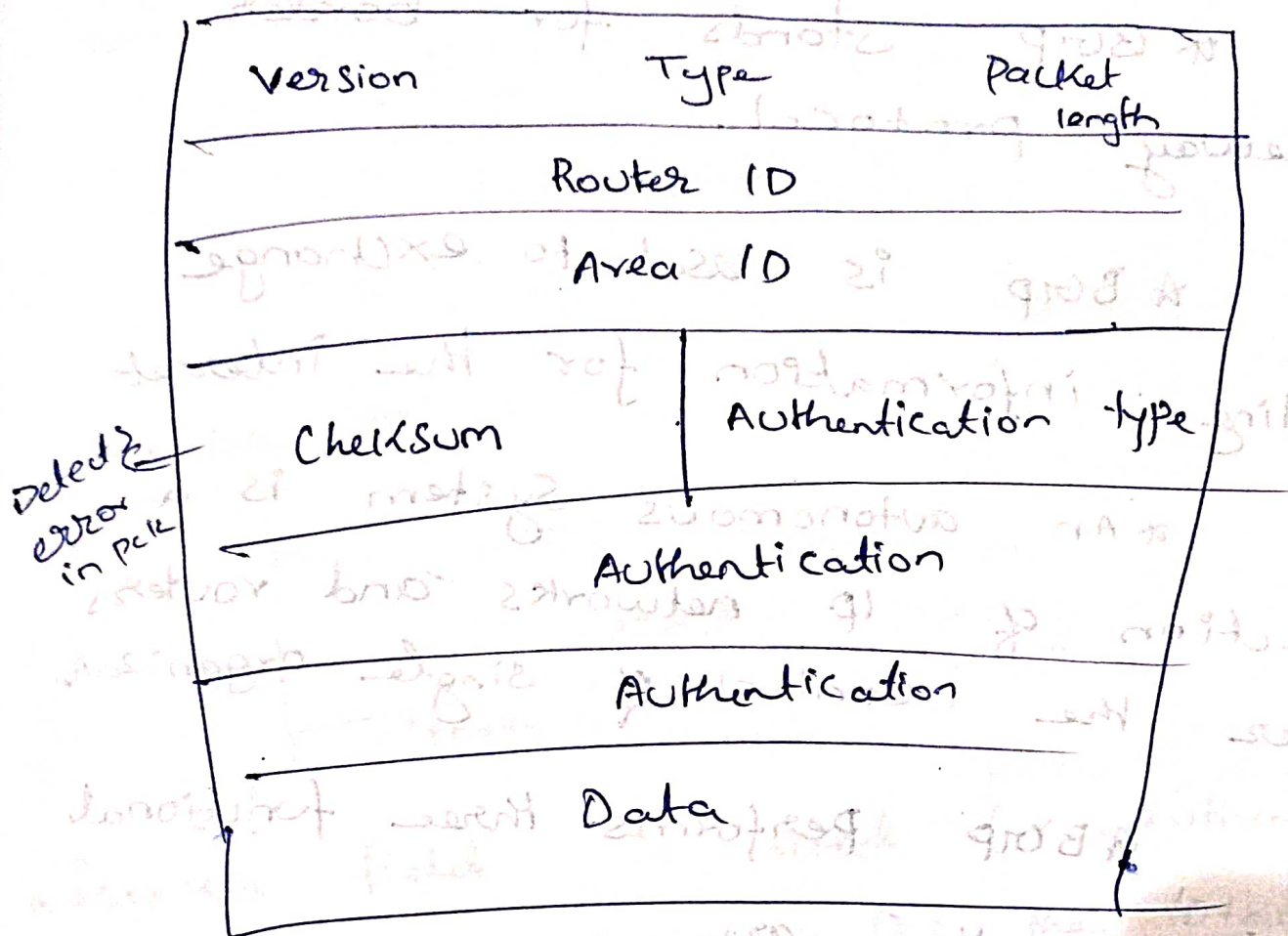
\* Backbone router

\* Autonomous router





## Header format:



## Advantages:

- \* Low traffic overhead
- \* fast convergence
- \* Area based topology
- \* Supports for complex address structure
- \* Authentication

## Disadvantages:

- \* Memory overhead
- \* processor overhead
- \* config is complex



## 5:) BGP:

\* BGP stands for border gateway protocol.

\* BGP is used to exchange routing information for the Internet.

\* An autonomous system is a collection of IP networks and routers under the control of single organization.

\* BGP performs three functional procedures. They are

- 1) Neighbour acquisition
- 2) Neighbour reachability
- 3) Network reachability

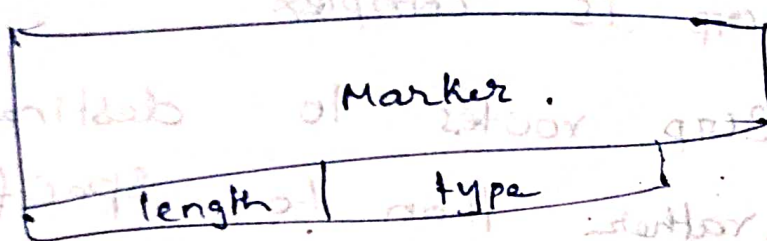
\* BGP connection inside an autonomous system is called internal BGP. (iBGP)

\* Connection between different autonomous systems are called external BGP.

\* There are three different types of autonomous system they are

- 1) Stub AS
- 2) Multi-Homed AS
- 3) Transit AS

Header format:



\* Marker field is used for authentication

\* length: This field indicates the total length of the msg

\* Type: This field indicates the type of msg.

\* BGP defines four types of Messages they are

- 1) OPEN
- 2) UPDATE
- 3) NOTIFICATION
- 4) KEEPALIVE



## Advantages:

- \* BGP is robust and Scalable routing protocol
- \* BGP easily solves the Count to infinity problem.

## Disadvantages:

- \* BGP is complex
- \* BGP routes to destination networks, rather than to specific hosts or routers.