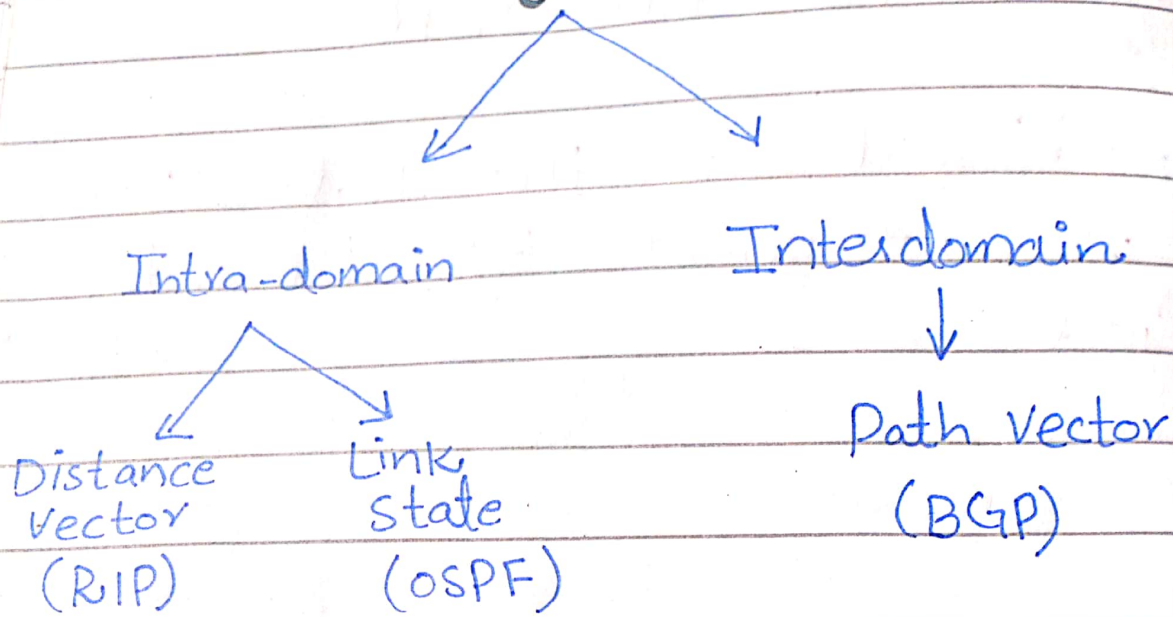


Routing Protocols:-

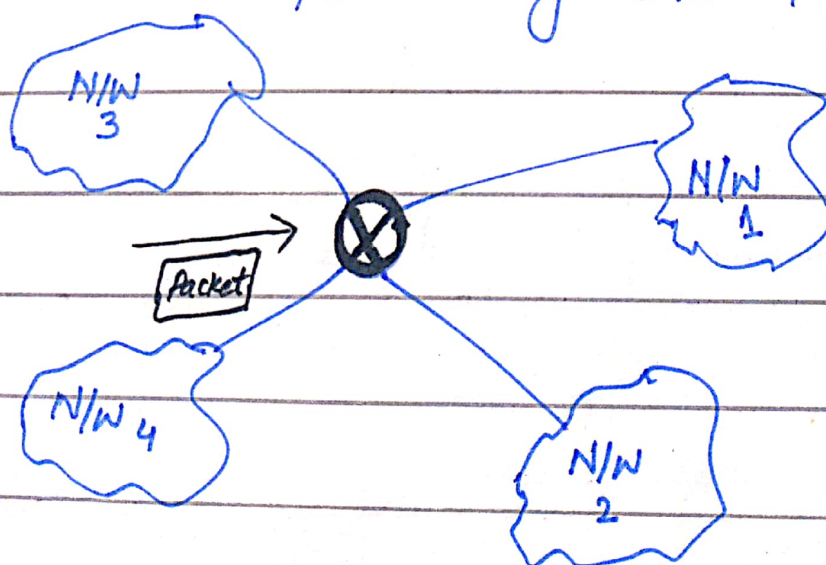


Network layer:-

→ one of the Major Functionality

i. Forwarding:-

Forwarding the Packet



Choose optimal (shortest) Path.

How to Find the Best Path?

→ Routing Table:-

Collection of entries.

STATIC ROUTING

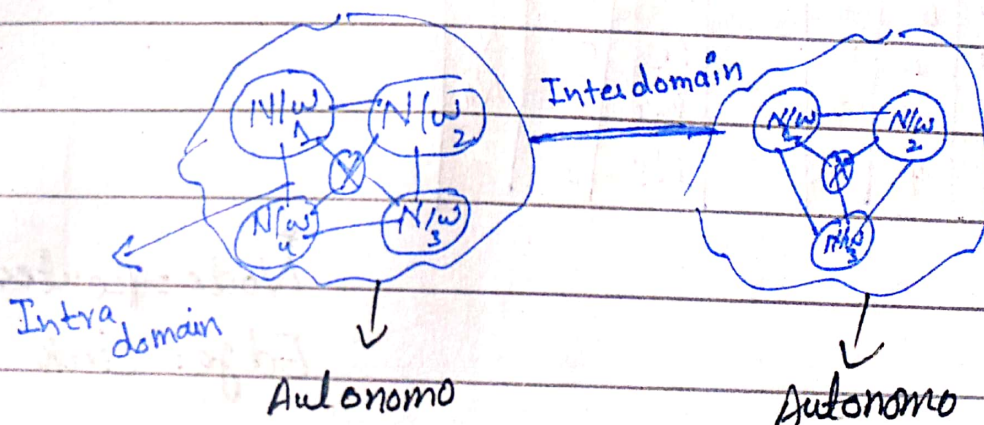
- * Manually Insert data through Network Administrator.
- * Possible in Small Networks

DYNAMIC ROUTING

- * Automatically updation.
- * Large Network
e.g. (Internet)

Internet:-

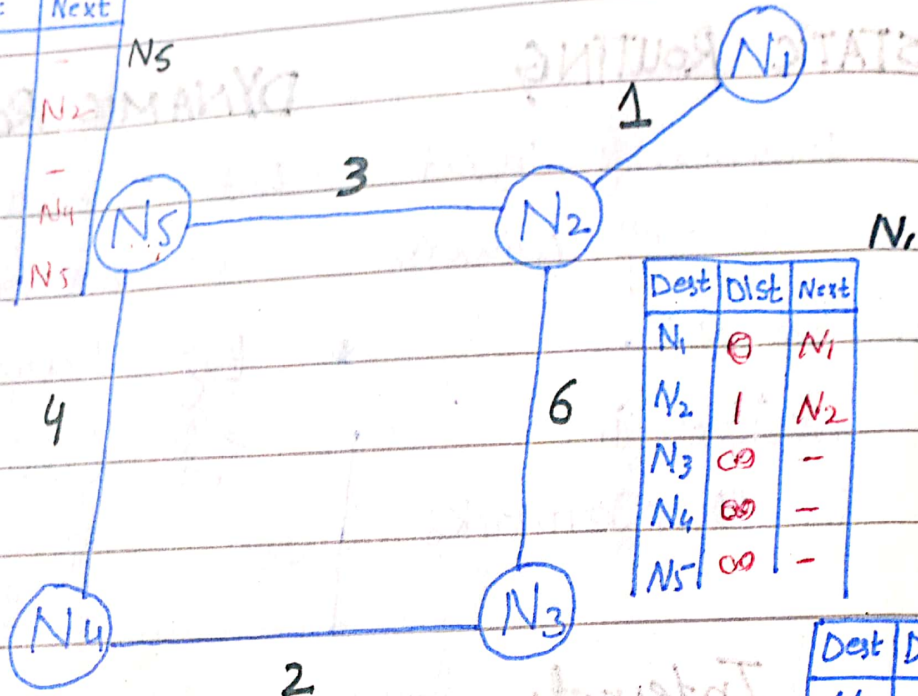
Internally Internet divided into autonomous systems



- * RIP:- (Router Information Protocol)
 - * OSPF:- (Open Shortest Path First)
 - * BGP:- (Border Gateway Protocol)
- } unicast

Distance Vector Routing: (DVR)

Dest	Dist	Next
N ₁	∞	-
N ₂	3	N ₂
N ₃	∞	-
N ₄	4	N ₄
N ₅	0	N ₅



Dest	Dist	Next
N ₁	0	N ₁
N ₂	1	N ₂
N ₃	∞	-
N ₄	∞	-
N ₅	∞	-

Dest	Dist	Next
N ₁	1	N ₁
N ₂	0	N ₂
N ₃	6	N ₃
N ₄	∞	-
N ₅	3	N ₅

Dest	Dis	Next
N ₁	∞	-
N ₂	∞	-
N ₃	2	N ₃
N ₄	0	N ₄
N ₅	4	N ₅

Dest	Dis	Next
N ₁	∞	-
N ₂	6	N ₂
N ₃	0	N ₃
N ₄	2	N ₄
N ₅	∞	-

* Node: Router
Edge: Link

∞ = infinite

"Local Routing Table"

- 1) Share with only neighbours.
- 2) Share only distance vector

$N_1 \rightarrow N_2$

$N_2 \rightarrow N_5, N_3, N_1$

$N_3 \rightarrow N_2, N_4$

$N_4 \rightarrow N_3, N_5$

$N_5 \rightarrow N_2, N_4$

$N_1 \rightarrow$ Distance vector (N_2)

Distance vector

Dist
1
0
6
∞
3

N_1 (New Routing table)

Dest	Dist	Next
N_1	0	N_1
N_2	1	N_1
N_3	7	N_3
N_4	∞	-
N_5	4	N_5

$N_1 \rightarrow N_2$ and $N_2 \rightarrow N_2$

$$1 + 0 = 1$$

$N_1 \rightarrow N_2$ and $N_2 \rightarrow N_3$

$$1 + 6 = 7$$

$N_1 \rightarrow N_2$ and $N_2 \rightarrow N_4$

$$1 + \infty = \infty$$

$N_1 \rightarrow N_2$ and $N_2 \rightarrow N_5$

$$1 + 3 = 4$$

At N_5 (N_2, N_4)

N_2	N_4
Dist	Dist
1	∞
0	∞
6	2
∞	0
3	4

N_5 New (R.T)

$N_5 \rightarrow N_1$

$N_5 \rightarrow N_2$ and $N_2 \rightarrow N_1$

$$3 + 1 = 4$$

Dest	Dist	Next
N_1	4	N_2
N_2	3	N_2
N_3	6	N_4
N_4	4	N_4
N_5	0	N_5

$N_5 \rightarrow N_4$ and $N_4 \rightarrow N_4$

$$4 + 0 = 4$$

$N_5 \rightarrow N_4$ and $N_4 \rightarrow N_1$

$$4 + \infty = \infty$$

$N_5 \rightarrow N_2$

$N_5 \rightarrow N_2$ and $N_2 \rightarrow N_2$

$N_5 \rightarrow N_4$ and $N_4 \rightarrow N_2$

$$4 + \infty = \infty$$