Link State Routing

Link state routing is a technique in which each router shares the knowledge of its neighbourhood with every other router in the internetwork.

The three keys to understand the Link State Routing algorithm:

- **Knowledge about the neighbourhood:** Instead of sending its routing table, a router sends the information about its neighbourhood only. A router broadcast its identities and cost of the directly attached links to other routers.
- **Flooding:** Each router sends the information to every other router on the internetwork.This process is known as Flooding. Every router that receives the packet sends the copies to all its neighbours. Finally, each and every router receives a copy of the same information.
- **Information sharing:** A router sends the information to every other router only when the change occurs in the information.

Link State Routing has two phases:

Reliable Flooding

- **Initial state:** Each node knows the cost of its neighbour's.
- **Final state:** Each node knows the entire graph.

Route Calculation

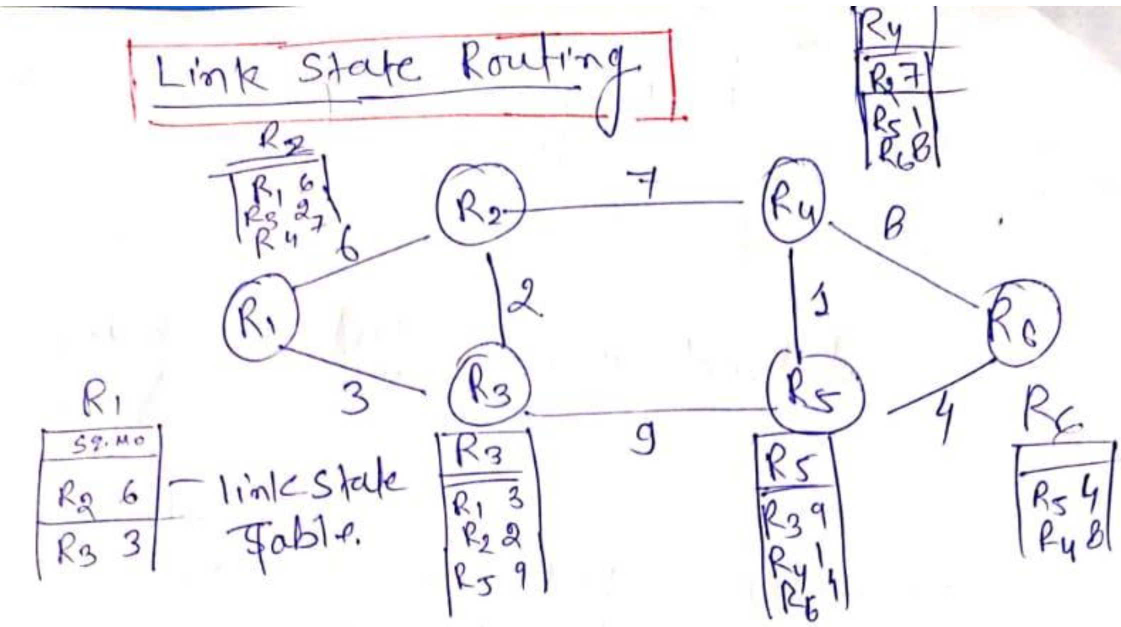
Each node uses Dijkstra's algorithm on the graph to calculate the optimal routes to all nodes.

- The Link state routing algorithm is also known as Dijkstra's algorithm which is used to find the shortest path from one node to every other node in the network.
- The Dijkstra's algorithm is an iterative, and it has the property that after kth iteration of the algorithm, the least cost paths are well known for k destination nodes.

Disadvantage:

Heavy traffic is created in Line state routing due to Flooding. Flooding can cause an infinite looping; this problem can be solved by using Time-to-leave field.

Link State Routing



R1	
Sq.no	
R2	6
R3	3

— link state Table.

R2	
R1	6
R3	2
R4	7

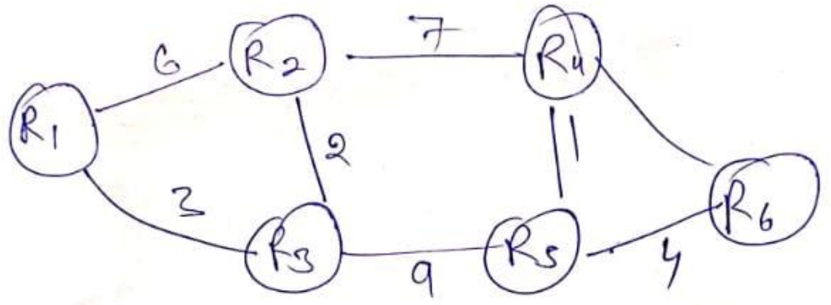
R3	
R1	3
R2	2
R5	9

R4	
R2	7
R5	1
R6	8

R5	
R3	9
R4	1
R6	4

R6	
R5	4
R4	8

Flooding → every Router Share the link state table to each other that is called Flooding'.



global knowledge

R1	[illegible]	R2	R3	R4	R5	R6
R1		6	3	∞	∞	∞
R1R3		5	3	∞	12	∞
R1R3R2			[illegible]	12	12	∞
R1R3R2R4				[illegible]	12	21
R1R3R2R4R5						16

		Via
R1	0	R1
R2	5	R1
R3	3	R1
R4	12	R3R2
R5	12	R3
R6	16	R3R5