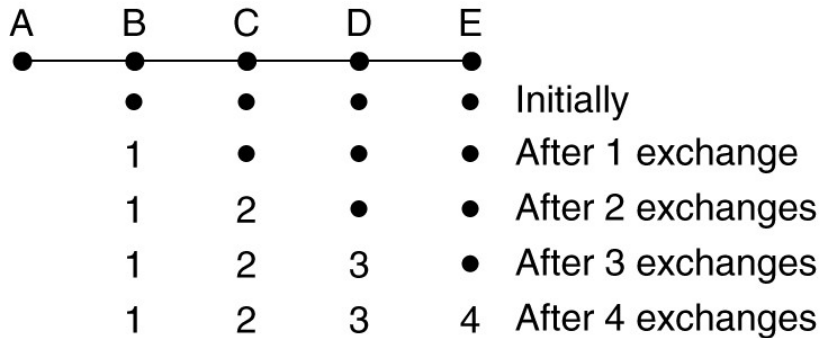


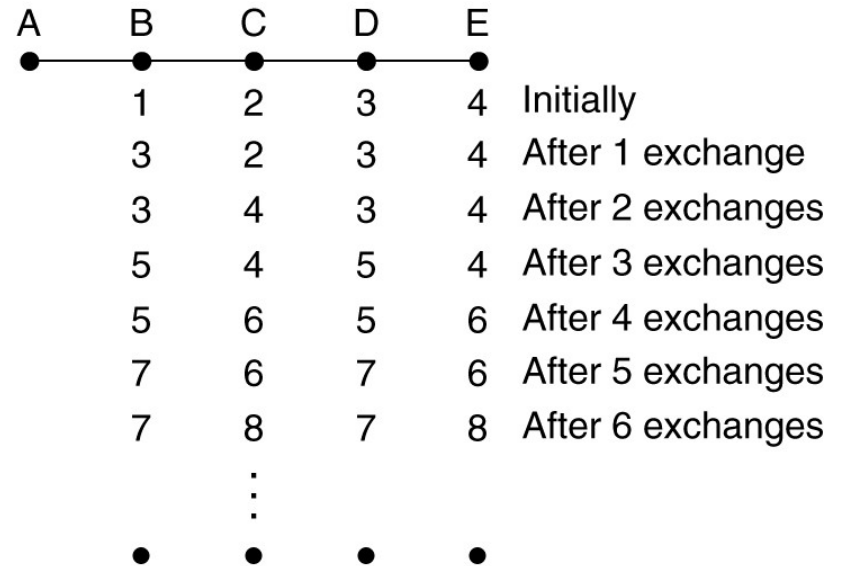
# UNIT-3

## The Network Layer

# Distance Vector Routing (2)



(a)



(b)

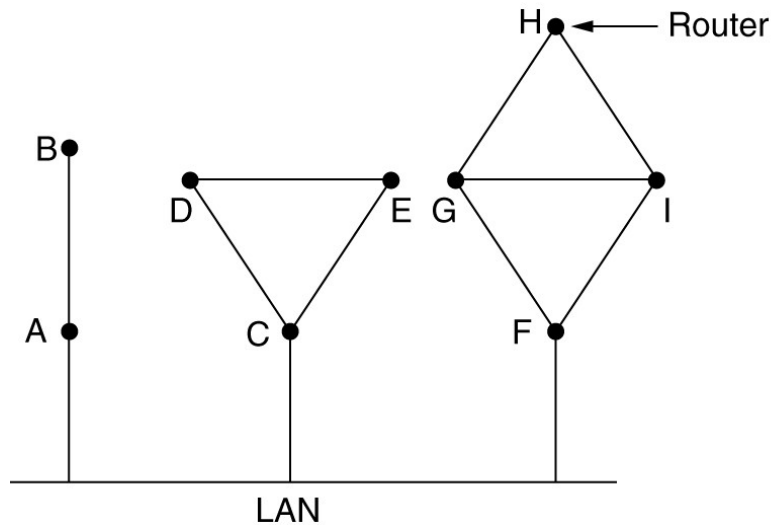
The count-to-infinity problem.

# Link State Routing

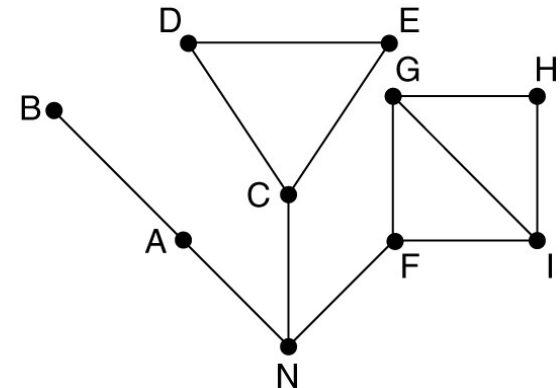
Each router must do the following:

1. Discover its neighbors, learn their network address.
2. Measure the delay or cost to each of its neighbors.
3. Construct a packet telling all it has just learned.
4. Send this packet to all other routers.
5. Compute the shortest path to every other router.

# Learning about the Neighbors



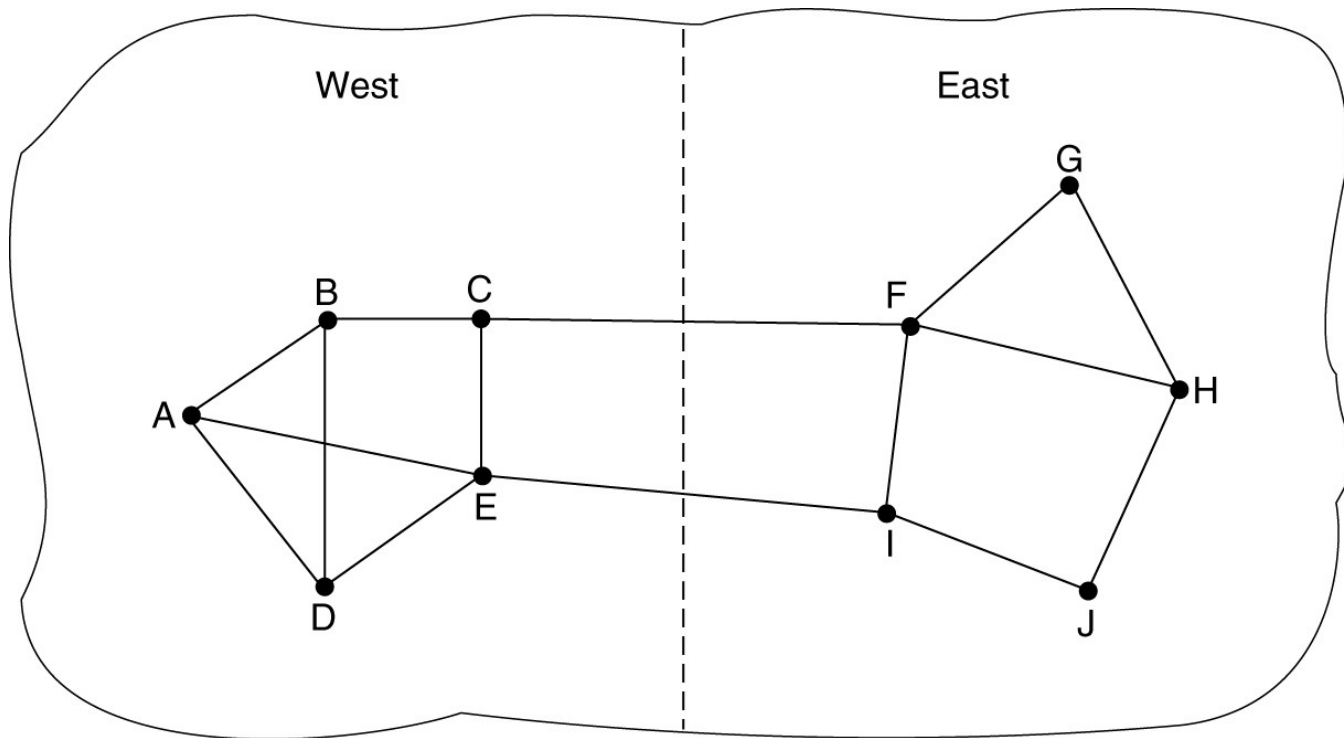
(a)



(b)

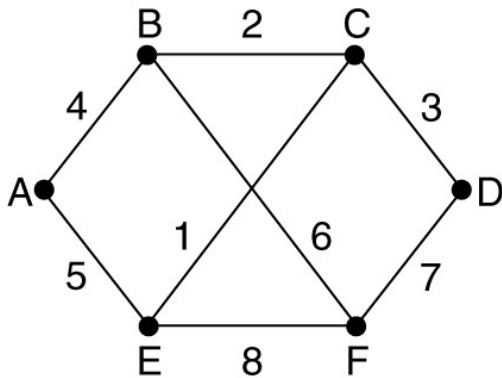
(a) Nine routers and a LAN. (b) A graph model of (a).

# Measuring Line Cost



A subnet in which the East and West parts are connected by two lines.

# Building Link State Packets



(a)

		Link		State		D		E		F	
A		B		C		D		E		F	
Seq.		Seq.		Seq.		Seq.		Seq.		Seq.	
Age		Age		Age		Age		Age		Age	
B	4	A	4	B	2	C	3	A	5	B	6
E	5	C	2	D	3	F	7	C	1	D	7
		F	6	E	1			F	8	E	8

(b)

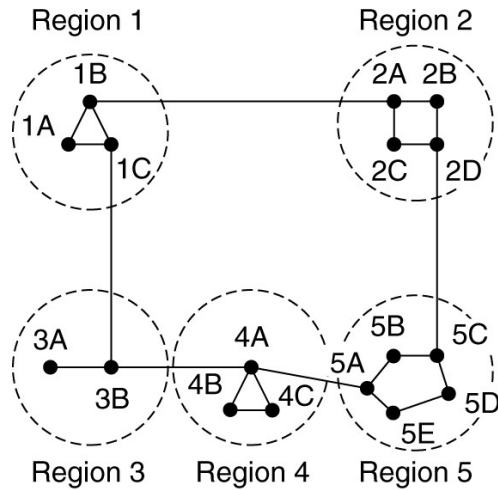
(a) A subnet. (b) The link state packets for this subnet.

# Distributing the Link State Packets

Source	Seq.	Age	Send flags			ACK flags			Data
			A	C	F	A	C	F	
A	21	60	0	1	1	1	0	0	
F	21	60	1	1	0	0	0	1	
E	21	59	0	1	0	1	0	1	
C	20	60	1	0	1	0	1	0	
D	21	59	1	0	0	0	1	1	

The packet buffer for router B in the previous slide (Fig. 5-13).

# Hierarchical Routing



(a)

Full table for 1A

Dest.	Line	Hops
1A	—	—
1B	1B	1
1C	1C	1
2A	1B	2
2B	1B	3
2C	1B	3
2D	1B	4
3A	1C	3
3B	1C	2
4A	1C	3
4B	1C	4
4C	1C	4
5A	1C	4
5B	1C	5
5C	1B	5
5D	1C	6
5E	1C	5

(b)

Hierarchical table for 1A

Dest.	Line	Hops
1A	—	—
1B	1B	1
1C	1C	1
2	1B	2
3	1C	2
4	1C	3
5	1C	4

(c)

Hierarchical routing.