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FACULTY OF ENGINEERING & TECHNOLOGY

BCA-302Computer Networks

Lecture-21

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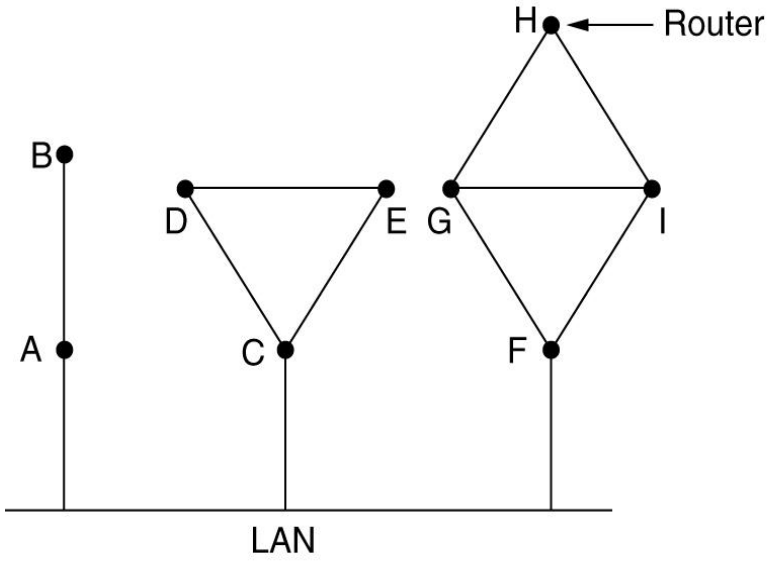
OUTLINE

- LINK STATE ROUTING
- LINK STATE ROUTING : MEASURING LINE COST
- LINK STATE ROUTING : BUILDING LINK STATE PACKETS
- LINK STATE ROUTING : DISTRIBUTING THE LINK STATE PACKETS
- HIERARCHICAL ROUTING

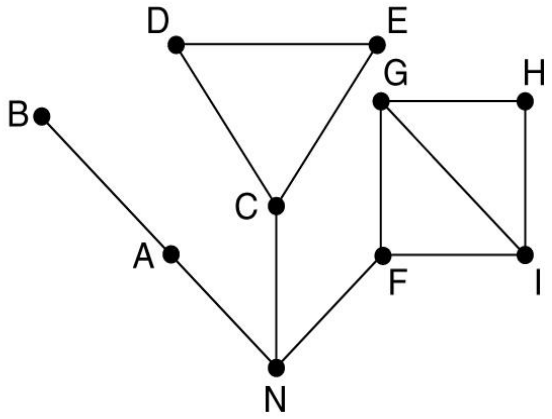
LINK STATE ROUTING

Each router must do the following:

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



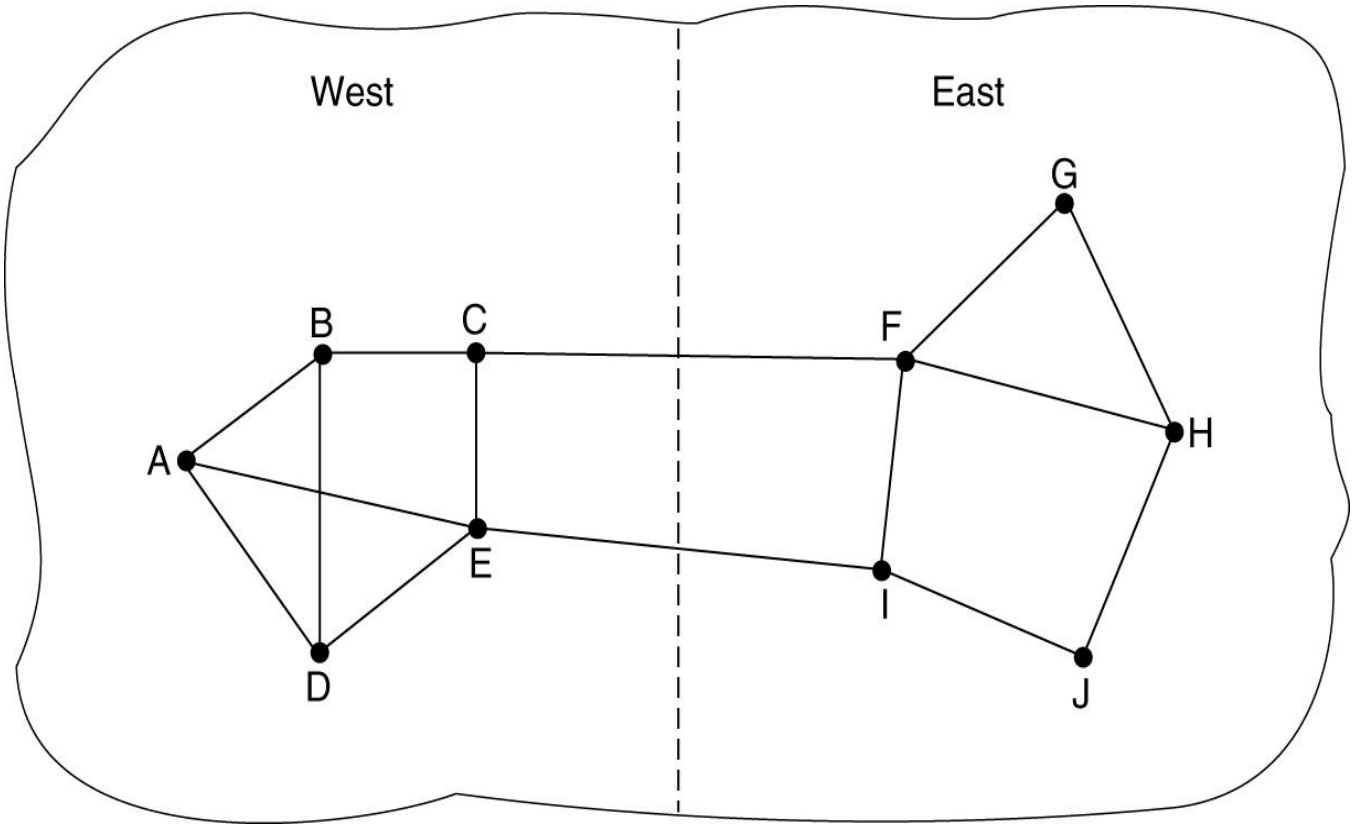
(a)



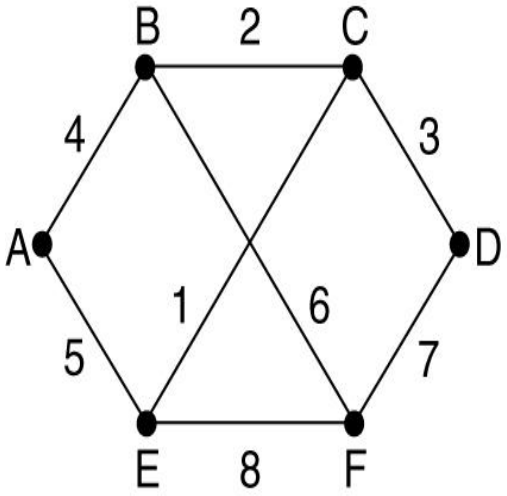
(b)

LINK STATE ROUTING : MEASURING LINE COST

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



LINK STATE ROUTING : BUILDING LINK STATE PACKETS



(a)

(a) A subnet.

Link State Packets

A	
Seq.	
Age	
B	4
E	5

B	
Seq.	
Age	
A	4
C	2
F	6

C	
Seq.	
Age	
B	2
D	3
E	1

D	
Seq.	
Age	
C	3
F	7

E	
Seq.	
Age	
A	5
C	1
F	8

F	
Seq.	
Age	
B	6
D	7
E	8

(b)

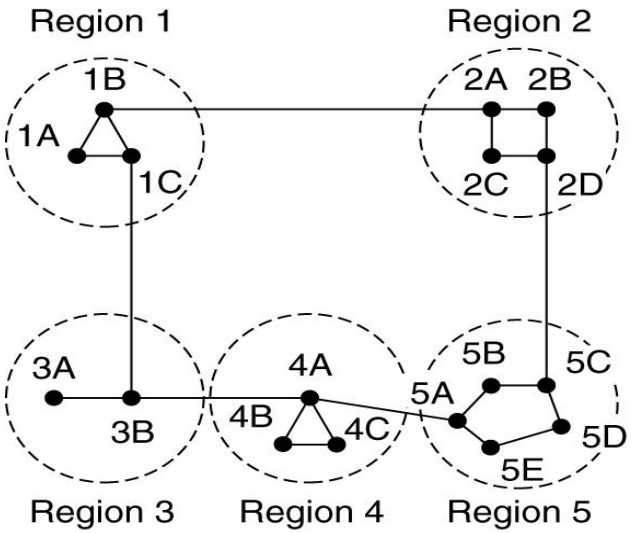
(b) The link state packets for this subnet.

LINK STATE ROUTING : DISTRIBUTING THE LINK STATE PACKETS

The packet buffer for router B in the previous slide

			Send flags			ACK flags			
Source	Seq.	Age	A	C	F	A	C	F	Data
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	

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)

Multiple Choice Question

MUTIPLE CHOICE QUESTIONS:

Sr no	Question	Option A	Option B	OptionC	OptionD
1	What is the subnet id of a host with an IP address 172.16.66.0/21?	172.16.36.0	172.16.48.0	172.16.64.0	172.16.0.0
2	he network address of 172.16.0.0/19 provides how many subnets and hosts?	7 subnets, 30 hosts each	8 subnets, 8,190 hosts each	8 subnets, 2,046 hosts each	7 subnets, 2,046 hosts each
3	Which of the following is the broadcast address for a Class B network ID using the default subnetmask?	172.16.10.255	255.255.255.255	172.16.255.255	172.255.255.255
4	You have an IP address of 172.16.13.5 with a 255.255.255.128 subnet mask. What is your class of address, subnet address, and broadcast address?	Class A, Subnet 172.16.13.0, Broadcast address 172.16.13.127	Class B, Subnet 172.16.13.0, Broadcast address 172.16.13.127	Class B, Subnet 172.16.13.0, Broadcast address 172.16.13.255	Class B, Subnet 172.16.0.0, Broadcast address 172.16.255.255
5	If you wanted to have 12 subnets with a Class C network ID, which subnet mask would you use?	255.255.255.252	255.255.255.255	255.255.255.240	255.255.255.248

REFERENCES

- http://www.engppt.com/2009/12/networking-fourozan-ppt-slides.html